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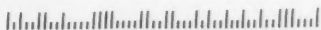


KIOSK MANIA



THOUSANDS OF WEB-CONNECTED kiosks are being deployed in stores, airports and hospitals across the U.S. as pillars of the self-service economy. Kmart has 3,500, for example, and Staples has 2,500. But to make the kiosk fad pay off, IT departments must supply high-bandwidth, ultrareliable networks.

Story begins on page 18.



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NEWSPAPER

85

MICROSOFT IN HOT SEAT AFTER CODE RED

As worm feeds on vulnerabilities in Web server software, users demand more-secure programs

BY DAN VERTON
WASHINGTON

It was a scene that would be familiar to officials of Bridge-stone/Firestone Inc. A Microsoft executive watched as a government official told a gathering of reporters that there was a serious problem with a Microsoft product.

Ronald Dick, director of the FBI's National Infrastructure Protection Center, last week warned that a computer worm called Code Red was spreading rapidly across the Internet for the third time in less than three weeks. It was taking advantage of a vulnerability discovered in the Web server software that runs on Microsoft Corp.'s Windows 2000 and NT operating systems. The health of the Internet and e-commerce was at

stake, the government warned.

But unlike the case with faulty Firestone tires, Microsoft's problem wasn't life-threatening, and it didn't lead to a massive product recall. Instead, it's costing businesses



NIPC DIRECTOR Ronald Dick (right) and Chris Rouland of Internet Security Systems Inc. sound the Code Red alarm.

around the world more than \$1 billion, by some estimates, and hundreds of man-hours to fix. That has led some users and experts to argue that it's time to demand more secure software from vendors.

"Do we have to wait until someone gets killed?" asked Jack Ring, owner of Innovation Management, an IT consulting firm in Scottsdale, Ariz., in a letter to *Computerworld*. "[It] must be nice to be a billionaire, but can it feel good when the billion is what others are losing by using your products?"

Because of the security issues associated with Microsoft software, "we are looking at other technologies," said a

Code Red, page 61

DIMMED UTILITIES PLUG INTO CRM

Financial woes don't stop projects in Calif.

BY MARC L. SONGINI

Despite serious financial obstacles, California's top power companies are continuing to invest heavily in customer relationship management systems to help customers contend with rolling blackouts and spikes in electricity prices.

The problem is that, overall, power companies still don't go far enough to satisfy customer demands, critics say.

For instance, Southern California Edison, which is billions of dollars in debt, went live last month with a set of call center applications from Siemens AG, said Harry Hutch-

CRM, page 61

IBM OPENS UP MAINFRAMES TO SANs

Fibre Channel speeds direct ties to servers

BY LUCAS MEARIAN

IBM last week announced a series of storage products aimed at large corporate users, including a Fibre Channel link that's supposed to let users directly connect their mainframes to the same storage-area networks used by Unix and Windows servers.

The Fibre Channel connection will tie mainframes to IBM's TotalStorage Enterprise Storage Server, known more informally as Shark. The company said the Fibre Channel

support will increase peak I/O rates between big-iron boxes and the high-end disk array by almost six times compared with the proprietary Escon architecture that it and other mainframe vendors use now.

Joe Poole, technical support manager at Boscov's Department Stores in Reading, Pa., is already getting ready for the planned late-September release of the Fibre Channel connection, which IBM is referring to in shorthand as Ficon.

Poole said that he finished installing a 1.7TB Shark array late last month to hold all of Boscov's business-critical data

IBM, page 16

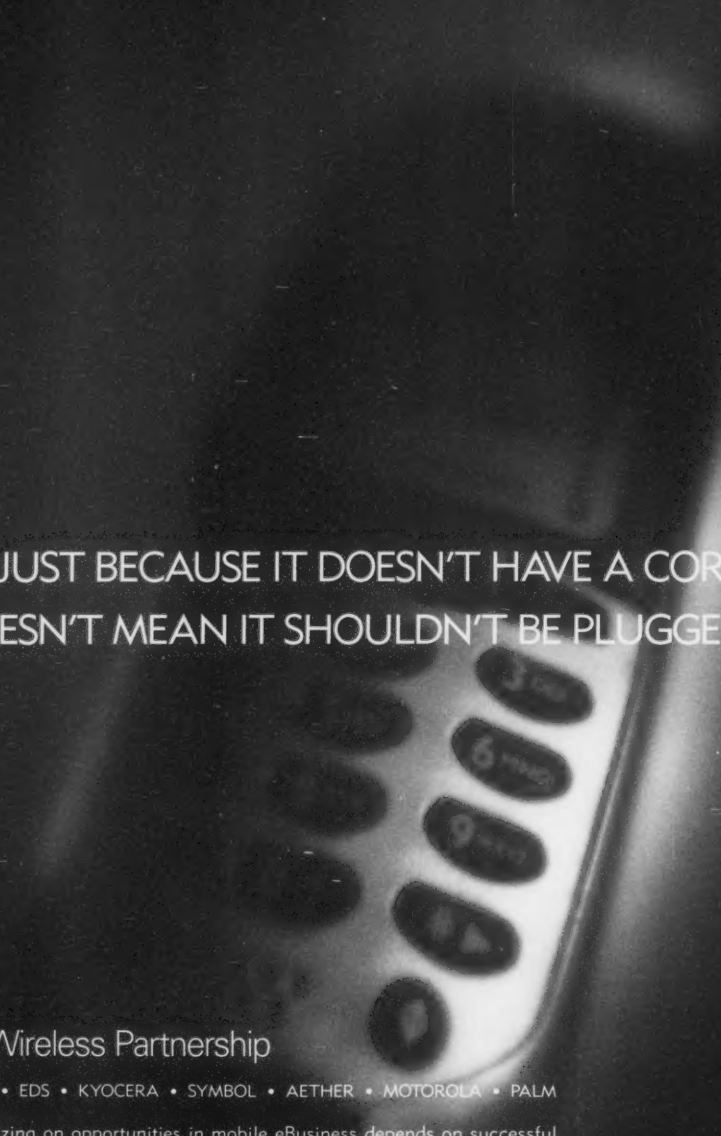
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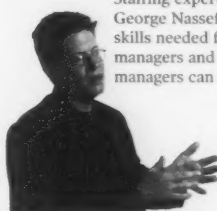
LESSONS FROM A GLOBAL MANAGER

In the 18 months since she became vice president for international investments at Prudential Financial, Irene Dec has traveled the world and gained unique insights into what it takes for female IT managers to succeed in the global market. **PAGE 34**

BEING ALICE

THE PERFECT PROJECT MANAGER

Staffing experts John Oliver (left) and George Nassef (right) discuss the skills needed for successful project managers and reveal where hiring managers can find them. **PAGE 50**



GRANT KESSLER

JOHN RAE

AUGUST 6, 2001

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PERILS OF ONLINE CREDIT CARD FRAUD

Online merchants are upset about what they say is a credit card authorization system that's stacked against them and ripe for fraud. Read the story in the Security Community.

www.computerworld.com/security

IS LINUX BETTER FOR BUSINESS?

Linux open standards will ultimately be a better fit for business users than closed operating systems, predicts *Computerworld* community member Charles A. Bushong — and IT managers had better get ready for a transition.

www.computerworld.com/community/os

PDA MAKERS HEAD TO SCHOOL

Personal digital assistant makers are making inroads into the classroom as they reach out to their future — up-and-coming IT leaders who have a mind and a taste for technology.

www.computerworld.com/wireless

AT DEADLINE

J.D. Edwards Warns Of Another Loss

Struggling business applications vendor J. D. Edwards & Co. warned that it expects to report a loss of about \$11 million from "normalized operations" for its fiscal third quarter, which ended July 31. The Denver-based company also plans to take charges of more than \$160 million to cover restructuring costs and other expenses. It said that third-quarter revenue will likely be down 23% year-to-year.

New Forum Aimed at CIOs, IT Managers

Hunter Management Group, a consulting firm in Westport, Conn., is organizing a new forum aimed at CIOs and other high-level IT managers at large companies. The Technology Leadership Council, which is due to hold its first meeting in October, will focus on issues such as IT management strategies and negotiating purchases with vendors.

Pathnet Contracts Handed Off by Judge

Chicago-based Universal Access Inc. said it has been authorized by the U.S. Bankruptcy Court for the Eastern District of Virginia to take over \$2.6 billion worth of network interconnection contracts from Reston, Va.-based Pathnet Telecommunications Inc. and its subsidiary Pathnet Inc.

Agile Sees Bigger Loss, Sales Shortfall

San Jose-based Agile Software Corp. said it will likely report a larger-than-expected loss for its fiscal quarter ended July 31, with revenue coming in as much as 15% below earlier projections. The maker of supply chain collaboration software was expected to be bought by Mountain View, Calif.-based Ariba Inc., but the deal was called off in April.

UCITA Goes Back To Drawing Board

Bar plans full review of software licensing law; opponents say it's too flawed to fix

BY PATRICK THIBODEAU

IN AN AGREEMENT that made UCITA proponents cool their heels, the American Bar Association (ABA) last week called off plans to adopt a resolution seeking extensive revision of the software licensing measure.

The ABA, which is expected to be influential in the state-by-state battle over the proposed law, will instead form a task force to examine the strengths and weaknesses of the legislation.

In exchange, the group that proposed the software licensing law to the states, the National Conference of Commissioners on Uniform State Laws (NCCUSL), will postpone its push for adoption of the Uniform Computer Information Transaction Act, as it's formally known, according to sources familiar with the agreement.

Moreover, the NCCUSL plans to meet in November to consider changes to the proposed law, in what might be a last-ditch effort to broaden consensus on a measure that has faced a lot of end-user opposition.

"There are two choices. One is for the states to work together, to collaborate to come up with uniform rules. The other is for Congress to adopt uniform rules," said Carlyle "Connie" Ring Jr., chairman of the NCCUSL's UCITA drafting committee. Ring maintains that if consensus isn't reached on UCITA, federal lawmakers will have little choice but to move in to adopt a workable uniform law.

But UCITA's opponents are skeptical that any consensus agreement is possible and say that the proposed law — so far adopted only in Maryland and

Virginia — can't be fixed.

"I think it's too flawed for that," said Gordon Pence, intellectual property counsel at Caterpillar Inc. in Peoria, Ill. Pence said he's doubtful of the effort to reach a new consensus, since many recommendations made by opponents have been rejected by the drafting committee in prior years.

Moreover, if the NCCUSL does stop pushing for UCITA's adoption while the ABA review is under way, that doesn't mean that vendors and trade

groups lobbying in support of the law will curtail their efforts, said opponents.

The ABA's Tort and Insurance Practice Section (TIPS), a major group within the Chicago-based organization, said in a resolution that UCITA should be extensively revised to better reflect current law on licensing intellectual property, "with due regard for basic rights of consumers and the protection of licensees from unwarranted unilateral actions of the licensor."

UCITA proponents argue that corporate customers are free to set their own contract terms with vendors and that all the act does is set default rules.

Hervey Levin, an ABA sec-

The Great Debate

American Bar Association: The influential legal association plans to form a task force to examine UCITA.

National Conference of Commissioners on Uniform State Laws: The group that drafted UCITA will meet in November to consider opponent-backed changes.

Outlook: If no consensus is reached, UCITA may fail as a uniform state law. Proponents will then look to Congress to act.

tion delegate representing TIPS, said the UCITA task force will be selected by the association's president. He said the task force will likely include a balanced group that will work in an atmosphere of "mutual respect" with the NCCUSL. An intellectually honest report "will advance the state of knowledge for all of us," he said. ▀

FTC Security Rules May Have Broad Impact

BY PATRICK THIBODEAU
WASHINGTON

The Federal Trade Commission (FTC) is considering a set of rules that could affect the information security practices at a range of businesses. And although the FTC says the hallmark of the rules will be flexibility, industry analysts say it will still give IT managers something else to worry about.

The FTC last week began seeking comment from businesses and trade groups concerning its so-called Safeguards Rule, which is aimed at ensuring adequate protection of customer information, including records that are handled electronically. The information security component of the rule is part of the privacy requirements set by the Gramm-Leach-Bliley financial modernization law in 1999.

The impact on businesses is potentially broad: Gramm-Leach-Bliley is targeted at banks, brokerages and insurance firms, but it also covers a large number of companies not

traditionally thought of as financial services, such as legal offices that handle customer financial records, companies that extend credit and any data-processing services involving financial data. This means that a lot of companies could be required to make new assessments of the measures they take to safeguard data.

The proposal offers "a lot of

flexibility," said Laura Berger, an attorney in the FTC's division of financial practices. "We took a lot of care not to undermine people's flexibility by putting in specific objectives."

The questions under consideration aren't significantly different from those already reviewed by banking regulators such as the Federal Reserve and the Comptroller of the Currency. Earlier this year, those agencies issued a set of information security requirements under Gramm-Leach-Bliley as "guidelines" that recommend that financial institutions consider practices such as penetration testing and encryption.

The FTC will focus its attention on businesses not already regulated by other government entities, said analysts.

"The FTC has sort of the last jurisdictional bite," said Gary Clayton, CEO of Privacy Council Inc., a consulting firm in Richardson, Texas. "If you are not regulated by the other agencies, it falls to the FTC." ▀

AT ISSUE

The FTC's IT Questions

- When assessing threats and hazards, should a financial institution be required to classify the value and sensitivity of the records to be protected and the gravity of the threats? Should these assessments be in writing?
- Should the rule require that the effectiveness of existing safeguards be evaluated through appropriate tests?
- Should financial institutions be required to reassess the threats or hazards to their information security systems and, if so, at what intervals?

Feds Cast Bait to Lure IT Workers From Private Sector

Proposed exchange program would keep public-sector techies up to date

BY PATRICK THIBODEAU
WASHINGTON

Legislation was introduced last week to allow federal IT managers to work at private-sector jobs for up to two years while being paid as government employees through an exchange program that would also allow private-sector workers to sample government employment.

The legislation was proposed by Rep. Tom Davis (R-Va.), who represents a district loaded with government IT contractors. The bill is intended to help address a government shortage in IT labor by giving federal workers an opportunity to upgrade their skills.

"We have excellent federal employees, but they are not getting all the updates and training," Davis said at a news conference last week at which he discussed the Digital Tech-Corps Act of 2001. He described the measure as necessary to improve the job satisfaction of federal IT workers who want exposure to the newest technologies.

The federal government is "no longer the leader" in IT, said Davis. "We lag behind the private sector."

But at a hearing last week by the Subcommittee on Technology and Procurement Policy that focused on the IT labor shortage, government officials said that IT-strapped federal agencies will be more interested in bringing in private-sector workers than in sending federal managers on sabbaticals in the private sector.

Addressing the Workforce 'Crisis'

Stephen Perry, administrator of the U.S. General Services Administration, said the "crisis, or emerging crisis," in the federal IT workforce is more serious than the labor problems in the private sector. The program's emphasis should be "on bringing people

in," according to Perry.

The federal government had about 60,000 IT employees at the end of last year. But by 2006, about half of the government's IT workforce will be eligible for retirement.

If enacted, the exchange program would start with a relatively small number of employees — about 30 midlevel managers — and eventually expand to include hundreds of workers.

As outlined by Davis, who

heads the Subcommittee on Technology and Procurement Policy, a federal agency would first negotiate an exchange agreement with a private company. A private-sector worker who took a government post would be paid by his company. Federal managers in the program would retain their government salaries and benefits.

To prevent private firms from hiring government workers in the program, the bill would require a federal employee to serve in a government job for a period equal to the length of the assignment.

David Walker, comptroller

general at the U.S. General Accounting Office, said the private sector "is in a position to benefit potentially more on a recurring basis" from the program because of the increased reliance of federal agencies on IT contractors. Private-sector employees who take jobs in government under the exchange program would be in a good position to effectively compete for future government work, he said.

"There's nothing wrong with that," said Walker. "We need quality contractors to be able to address our challenges here."

Accenture, a Chicago-based

[The federal government is] no longer the leader. We lag behind the private sector.

REP. TOM DAVIS (R-VA.)

management and technology consulting company, said it has pledged to loan five managers to the Digital TechCorps for the first two years of the program. ■

Microsoft Releases Content Management Server 2001

Rebranded NCompass application features improved performance

BY CAROL SLIWA

The Royal Canadian Mint made a decision to take a Microsoft-centric approach last year when planning to rebuild its Web site. But for content management, the corporation had to turn to another vendor.

Now IT officials at the Ottawa-based coin maker said they're not only pleased that Microsoft Corp. acquired its content management vendor, but they're also glad that Microsoft directed its resources to speed the performance of the product, formerly known as Resolution.

Microsoft last week officially filled a void in its e-commerce product lineup with the release of Content Management Server 2001, a rebranded version of the Resolution product it acquired in May when it completed its \$36 million purchase of Vancouver, British Columbia-based NCompass Labs Inc.

IT manager at the Royal Canadian Mint. "Now the end users can do it themselves and publish within minutes."

Resolution 4.0, which hit the market in March, ran on Microsoft's Windows NT and Windows 2000 operating systems, but Microsoft's version will run only on Windows 2000. Product manager Chris Ramsey said its performance has been boosted by 40% to 60%.

Chris Carnack, a systems analyst at the Royal Canadian Mint, said pages now appear to load nearly twice as fast as they once did, because Microsoft fixed performance bugs and optimized the software to run on Windows 2000.

The coin maker uses the content management software with Microsoft's Commerce Server 2000 and SQL Server

2000, both of which run only on Windows 2000. One of the key reasons the mint planned to move to Windows 2000 was to gain its built-in network load-balancing capabilities to make it easier to add servers, or "scale out," as Web site traffic increases.

Meta Group analyst Andrew Warzecha said Microsoft is positioning the scalability-enhanced Content Management Server to compete against high-end content-management vendors such as the more Java-centric Documentum Inc., Interwoven Inc. and Vignette Corp. — especially for customers working in a Microsoft-centric environment.

But Connie Moore, an analyst at Cambridge, Mass.-based Giga Information Group Inc., said companies looking for high-end, highly scalable Web content management systems that support multiple platforms "are probably going to look elsewhere."

Moore said she expects Microsoft's offering to shoot to the "top of the short list" of vendors catering to midrange environments. Such vendors include Eprise Corp., IntraNet Solutions Inc. and Percussion Software Inc.

A typical Content Management Server installation sells for \$125,000 to \$200,000, according to Ramsey. ■

Then and Now

Microsoft's Content Management Server 2001 vs. NCompass's Resolution 4.0:

New packaging: Resolution featured a server-clustering component, a deployment manager (to deploy content from one Resolution server to another) and a content connector module (for integration between Resolution and Microsoft's Commerce Server 2000). Microsoft will bundle those components into Content Management Server.

New pricing model: Content Management Server's estimated retail price is \$39,900 per CPU. Resolution was priced at \$59,000 per server. The server-clustering add-on module sold for \$25,000, the content connector was \$10,000, and the site deployment manager was \$10,000.

Chubb Chooses Start-up For Document Management

Insurer selects product that uses WebDAV

BY LUCAS MEARIAN

CHUBB GROUP OF Insurance Companies is rolling out a 500-person Web-based document management system for its global underwriting department. The problem the company faces is common: a sprawling legacy back end.

Chubb has more than a terabyte of claims data stored on a Hitachi Ltd. disk array storage subsystem managed by Sun Solaris servers. That enables the Warren, N.J.-based insurer to manage data internally but doesn't allow cross-department sharing or let claims adjusters access files in the field.

According to Frank Niepold, Chubb's manager of electronic publishing, an IT department task force examined internal and external solutions to the problem this spring. The group chose a product from San Francisco-based start-up Xyθος Software Inc. because of its price and adherence to industry standards.

Xyθος' Webfile Server application is based on the Web Distributed Authoring and Versioning (WebDAV) protocol, a set of extensions to the Web protocol HTTP that standardize the way documents are posted to the Web.

The software automatically tags claims documents and files with metadata on things such as document date, Chubb department and author. Because they don't have to pore through a terabyte of data to locate documents, users can conduct searches far more quickly than they could with the old system.

Niepold acknowledged that the Webfile Server has limited capabilities. For example, the product doesn't offer work-

flow and can't store images of documents.

But, he said, field agents and internal users can retrieve, store, rename, copy and move files. Webfile also lets users lock and unlock files so that only one person at a time can access them.

"That comprises most of the things a typical organization needs to do with its files," said Chubb consultant Gary Gershon.

Niepold said another handy feature is Webfile's ability to store every version of a file on

the Web server, allowing immediate access to earlier versions of documents.

According to analysts, the problems Chubb is facing are common. Most insurance companies either don't have the right software or can't get users to store data about the files so the information can be found later.

"The concept of creating data about the data and making it easily accessible over the Web through everyday Web browsers so people can find it and don't have to create it again is very clever and useful," said Dan Kusnetzky, an analyst at market research firm IDC in Framingham, Mass. "At

this point, Xyθος is the only company that strung the pieces together to do this so that to end users, it appears simple, which is a plus."

Gershon, a principal at Intermedia Sciences in Ridgefield, Conn., said the problem with other WebDAV offerings, such as Oracle IFS and Microsoft Sharepoint, is that the applications must be run on those companies' platforms. "Xyθος works at the Web server level," he said.

That's not to say Chubb isn't using other document management systems. The company also uses more robust applications offered by FileNet Corp., a Costa Mesa, Calif.-based doc-

Webfile Server Pros and Cons

- + Can retrieve, store, rename, copy, move, lock or unlock files
- + Stores document versions
- + Price: About \$30,000 per server license, vs. \$500 to \$1,000 per user from other vendors
- Can't perform imaging or workflow functions

ument management and imaging vendor. "That's an excellent product," Gershon said.

"But from a financial standpoint, typically it's licensed per user anywhere from \$500 to \$1,000," which can be expensive "if you've got 4,000 users," he added.

Xyθος is charging Chubb \$30,000 per Webfile Server. ▀

Path Cleared for Sanctions in Microsoft Antitrust Case

Feds may initially target Windows XP

BY PATRICK THIBODEAU
WASHINGTON

The judge who will be asked to decide a remedy in the Microsoft Corp. antitrust case could be selected by the end of this week. And once the case is back before a new U.S. District Court judge, the government could quickly file motions seeking sanctions against the company while hearings on a permanent remedy are held, said legal experts.

"The government could ask for some immediate, preliminary relief," said Stephen D. Houck, former lead trial counsel for the 19 states involved in the lawsuit who is now in private practice at Reboul, MacMurray, Hewitt, Maynard & Kristol in New York. "All indications are that the government is taking the case very seriously, and they have positioned themselves to take ag-

gressive action very quickly."

A potential target of initial action may be the Windows XP operating system, which has drawn sharp criticism from the state attorneys general. At issue is the integration of instant messaging and other applications with the operating system, due for release Oct. 25.

The window for new legal moves against the company opened wide with the Aug. 2 rejection by the U.S. Court of Appeals of Microsoft's request for a rehearing of part of the court's June 28 decision. That decision found that the "commingling" of Internet Explorer and Windows code violated antitrust laws. With that order, the case returned to the lower court for reconsideration of remedy. The appeals court rejected the trial court's plan to break Microsoft into two companies but didn't reject the idea of a

breakup outright.

The appeals court also asked the lower court to reconsider the tying charge, which concerns the lower court's finding that Microsoft illegally tied its browser to the operating system. The court wants the issue re-examined using a legal standard that considers the consumer benefit of integration. The government could drop the tying claim and instead use the monopoly maintenance charge, which was affirmed, as the basis

for a remedy, said legal experts. Microsoft is considering appealing to the Supreme Court, and that could put on hold the lower court's remedy phase. That strategy will appeal to the company, said Hillard Sterling, an attorney at Gordon & Glickson LLC in Chicago. "Microsoft has little to lose in the Supreme Court," he said.

But there's no guarantee that

the high court will take the case.

In the meantime, the U.S. Department of Justice (DOJ) appears to be playing hardball with Microsoft. The department has called for immediate action on remedies and recently hired a highly regarded trial attorney, Philip S. Beck, to serve as lead trial counsel. Beck, who represented the Bush campaign during last year's election dispute, replaced David Boies.

The DOJ is moving "in a very vigorous way" on the case, said Kenneth Starr, a former judge of the U.S. Court of Appeals who is now advising Microsoft opponent ProComp, a Washington-based association of companies and trade groups. The message from the government is, "We really do not want to dally; the stakes in this industry are too high," said Starr at a Capitol Hill forum held on the case last week. ▀



STARR: Stakes for IT are too high to delay case.

MOREONLINE

For more coverage of Microsoft's legal battles, visit our Web site.
www.computerworld.com/mslegal

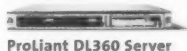
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Intel Pentium III processor 1.13GHz, 512K cache

18GB Pluggable Ultra3 SCSI hard drive⁵

256MB PC 133MHz ECC SDRAM (exp. to 6GB)⁶

2U⁷ form factor

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3/3/3 parts, labor, and on-site warranty⁸

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BRIEFS

Sun Cutting 300 Jobs In 'Redeployment'

Sun Microsystems Inc. said it expects to cut about 300 jobs by year's end, although it described the move as a "redeployment of resources" rather than a layoff. Sun, which has 43,600 employees, told 675 workers to find new jobs within the company and said 575 of them should be able to do so.

Intel Releases New Mobile Processors

Intel Corp. has announced five new Pentium III microprocessors for use in notebook PCs. Ten PC vendors have detailed plans to use the chips, which run at clock speeds of up to 1.13 GHz and boost performance by almost 50% on data-intensive applications, Intel said.

Dell Cuts Linux on PCs

Dell Computer Corp. has stopped offering the Linux operating system as an option on its desktop and laptop PCs, citing low demand. However, users who buy 50 or more PCs can still get the open-source software as a custom order. Dell will continue to sell Linux on its servers.

Server Sales Inch Up

Worldwide server shipments grew a minuscule 0.7% year to year in the second quarter, according to preliminary numbers from Dataquest Inc. in San Jose. Both Dataquest and Framingham, Mass.-based IDC said last month that PC sales declined by about 2% in the quarter.

Short Takes

Beleaguered LUCENT TECHNOLOGIES INC. in Murray Hill, N.J., said it raised \$1.9 billion in new funding through a sale of preferred stock. ... San Jose-based FUJITSU COMPUTER PRODUCTS OF AMERICA INC. is exiting the 3.5-in. disk drive market to focus on 2.5-in. models.

Michelin Sees Long Road to B2B Adoption

Tire maker favors small-step approach

BY MICHAEL MEEHAN

MICHELIN NORTH America Inc.'s e-commerce division has decided that rolling out a uniform business-to-business portal is too big a job to do all at once and that it will require significant customer involvement to do it right.

Tom Hall, manager of e-business development at the Greenville, S.C., tire manufacturer, said that every time a Michelin department is added to the business-to-business network, it will create an IT project in which a different database and technical architecture must be assimilated.

"This is not the kind of thing where you throw a switch and everything works," Hall said. "Every [Michelin] customer group has their own way of doing business. The biggest mistake I have seen in this whole world of electronic commerce is we get the cart and the horse turned around, picking technology and then looking for ways to use it."

In 1996, Michelin launched a business-to-business Web portal for its independent dealership customers. At the end of last year, more than 550 dealerships were connected and using the site to check technical data, turn in claims and purchase products through a Java connector to Michelin's IBM

mainframe, which runs Computer Associates International Inc.'s CA-IDMS database.

Now the challenge is to expand the offering to its national dealers, government accounts and automakers, many of which are using Michelin's electronic data interchange system. With six customer channels selling products from 17 manufacturing plants in the U.S., Canada and Mexico, Michelin's first step has been to design a system that can add one element at a time to the network.

"We've decided we have to build a solid base from which we can go in any direction," Hall said. "You don't know what your customers are going to want down the road, so you have to maintain flexibility."

Entigo Corp. in Vienna, Va., has been involved in the project since the 1995 start of Michelin's Bib Net, named after the company's famous roly-mou mascot, Bibendum. At first, Entigo had to build a proprietary application server to move the information that came through Bib Net, but Michelin now has a BEA WebLogic application server, allowing Entigo to focus on the connector build-out.

Ken Emory, director of professional services at Entigo, said the work will require Java and Open Database Connectivity interfaces, Java Message Service communications and a fair

number of custom adapters.

"This is a real challenge in terms of tying together different systems," Emory said. "If it's out there, Michelin's got it."

Hall said the problem is compounded by complexity on the customer side. "Before we start building too much, we'll pull a group of key users together and target business processes we can work on," he said.

Hall said those users will play a key role in helping

Michelin decide what sorts of XML-based trading documents it will create. One of the first documents deployed puts a catalog into customers' online procurement systems so they can take advantage of the technology they already have installed.

Perhaps the biggest issue, though, will be security. Bib Net users must have a virtual private network installed to perform transactions through the portal. "If we were going to run a hotel the way we run a tire company, we'd strip-search you at the door," Hall said. ▀

MOREONLINE

For more B2B news, head to our Web site. www.computerworld.com/e-commercecenter

Older Companies Lumber Toward Unified B2B

Old-line companies are at a competitive disadvantage to younger ones when it comes to building unified business-to-business portals, often putting pressure on IT managers in traditional firms to move more quickly than prudently.

Companies like Du Pont Co. in Wilmington, Del., are only now rolling out unified Web offerings for their different business units, which are replete with different legacy systems. "Don't take for granted how much sits behind that common look and feel," said Lisa Boothe, global e-business leader at Du Pont. "Our integration issues are as big as our company."

Yet, the portal work done at Du Pont, Michelin North America and other long-established companies is often likened to that of trailblazers such as Cisco Systems Inc. and Intel Corp., which have automated most of their customer relationships through a single Web gateway.

"But you can't use those guys as your benchmark if you're an older company," said Karen Peterson, an analyst at Gartner Inc. in Stamford, Conn. "They didn't have the same legacy system issues as the auto manufacturers. Also, Cisco spent a lot of money on this."

Andrew Warzecha, an analyst at Stamford-based Meta Group Inc., warned IT managers that business-to-business portals can be an endless IT project.

"The licensing costs for the software are minimal, between 5% and 15% of the total cost," he

said. "But the initial integration and ongoing service are about 60% to 80% of the total cost of ownership."

Most large companies will need custom adapters to Cobol applications running on mainframes, and those adapters will need tweaking whenever changes need to be made to the network feeding the portal, noted Warzecha.

"I don't think it will ever get to the point where it's a shrink-wrap offering" he said.

Both Peterson and Warzecha said that departments need to be added carefully to such portal offerings, with an eye toward the inevitable IT maintenance issues they will create. "There's so many potential points of failure that you can't afford to leave it alone and assume everything will be fine," Peterson said.

Warzecha said he expects most companies will have a unified portal in place by 2004. But with more than 100 vendors offering products, he cautioned users to select those that integrate well into the services being offered through application servers, which sit in the middle of these portal networks.

While he expects application server vendors such as BEA Systems Inc., IBM and Microsoft Corp. to eventually dominate the portal market, Warzecha warned that "they're about two or three generations behind the best-of-breed vendors at this time."

—Michael Meehan

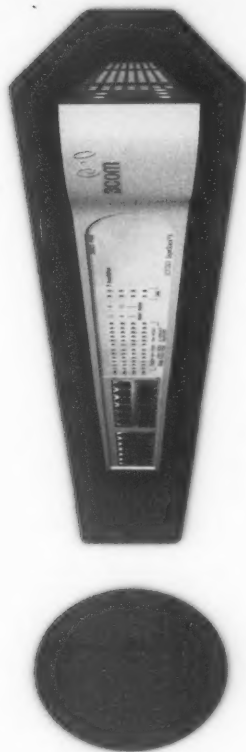
Wheeling Out a Portal

1996 Michelin North America launches a B2B portal targeting its smaller corporate customers

DEC. 2000 More than 550 companies are active users of the portal

MAY 2001 Michelin opens a revamped portal to its other business units, focusing first on adding trucking fleet customers

APRIL 2002 Projected time for all current users to migrate to the newer offering



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Cisco Device Aids Shift From Web to Wireless

Serves and formats content requests from wireless PDAs and mobile phones

BY JAMES COPE

CISCO SYSTEMS INC. announced last week a new network hardware device called CTE 1400, saying it transforms Web-based information nor-

mally accessed through a browser into data that can be displayed on a wide variety of wireless devices. Those devices include personal digital assistants (PDA) based on the Palm OS and ones that use Microsoft Corp.'s Windows

CE, Cisco officials said.

One user who has been testing the CTE 1400, Mitch Davis, CIO at Stanford University Law School in Stanford, Calif., said his institution has used it to convert information, such as that from Stanford Law databases and legal case studies, into formats for display on Palm VII PDAs from Santa Clara, Calif.-based Palm Inc.

"We also have projects to

convert information for access by WAP [Wireless Application Protocol] phones," Davis said.

Seth Redmore, product marketing manager at Cisco, said the new unit leverages content identification capabilities now available in Cisco's Catalyst 6000 series of network switches. The switches can determine if a request for information is coming from a standard computer Web browser, PDA or WAP-enabled phone, Redmore said.

When packet headers indicate that the request is from a wireless device, that request is routed by network switch to the CTE 1400. The CTE then works as a reverse proxy server, he said. It pulls the content desired by the user from the appropriate network server and automatically customizes it for the application and device requesting it.

Davis said he likes the built-in design function of the CTE. It's accessible through a browser, and IT personnel can configure page styles from Web-based applications for use on a wide variety of devices, from mobile phones to PDAs, without any knowledge of XML or HTML, he said.

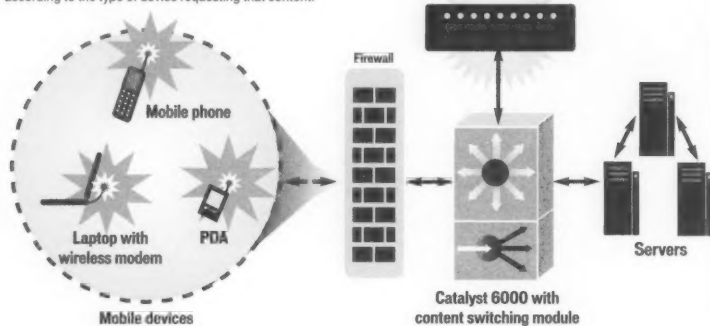
But Scott Ellison, director of mobile and wireless communications at IDC in Framingham, Mass., said that although the capability to convert informa-

tion to screen formats that are appropriate for wireless devices will become increasingly important, some types of content are simply not useful on small screens, citing spreadsheets as an example. "The delimiters for wireless devices are screen size and keyboard functionality," Ellison added.

Redmore said the CTE 1400 will ship sometime this month for \$69,995. ▀

What's Behind the CTE 1400

The CTE 1400 formats and serves content to wireless devices according to the type of device requesting that content.



IntelliSpace to Offer ISP Insurance Policies

BY JAMES COPE

In an effort to turn the demise of some Internet service providers (ISP) into an opportunity and protect companies from outages when service providers go out of business, New York-based IntelliSpace Inc. this week will announce an Internet insurance program.

The announcement comes in the wake of closures of scores of Internet service providers, which have left some firms that rely on Internet connections high and dry. As many as 30 major corporate service providers have failed since the

beginning of the year, according to IntelliSpace officials.

For a one-time fee ranging from \$200 to \$1,200 with no monthly charge, IntelliSpace will run a broadband Internet connection to a company's office, said IntelliSpace spokeswoman Kathryn Lancioni. Should a company's existing provider subsequently go out of business, Lancioni said, IntelliSpace will switch on its service in a matter of minutes.

Paul May, president of Chicago-based IT recruitment firm Paul May & Associates, said he thinks the insurance

program is a good idea.

His firm's original Internet service provider, Los Angeles-based Flashcom, went belly-up in February. May said he subsequently moved his connection to another company, ThoughtPort Authority of Chicago Inc. The latter was a good service provider, May said, but ThoughtPort informed him in March that Digital Subscriber Line provider NorthPoint Communications Group Inc., which ThoughtPort used to hook into May's building, was ceasing operations. San Francisco-

based NorthPoint filed for bankruptcy in January.

All in all, May said, his Internet connection was down for more than a week, which translated into up to \$50,000 in lost sales.

Ultimately, May said, he discovered that IntelliSpace had a T1 line running into the building where he leases space. He said he signed up for a piece of the T1 and now feels considerably more secure.

Though there's no monthly service charge for IntelliSpace's ISP insurance, companies that switch over to IntelliSpace service would pay monthly rates that vary according to the level of bandwidth required, said Lancioni. ▀

Cisco Enhances IP Call Center

Last week, Cisco announced that it has enhanced its Internet Protocol Contact Center (IPCC) to permit a near turnkey installation for small and midsize businesses that have 10 to 100 call center agents. A base package sells for \$50,000, according to the network equipment provider.

Cisco said it has also modified the Intelligent Contact Management application used in the IPCC system to support clusters of call center servers, enabling users to more easily expand the system as more agents are added.

"The clustering was a must for us," said Kevin Wood, network planning analyst at Volvo Information Technology North America in Greensboro, N.C., whose call center provides, among other things, emergency roadside assistance for Volvo truck drivers. "[The cluster capability] pretty much solidified the deal for IP scalability," he said. "We can have up to 10,000 phones in a cluster."

The IPCC now also works with switched automated call directors, which Cisco said enables companies to move from existing legacy systems to its IP-based call center without disruption.

According to Jeff Wasierski, director of telecommunications at call center outsourcer vCustomer Corp. in Renton, Wash., which uses Cisco's IPCC system, managing an IP-based call center is more like a network than a telecommunications system. Voice calls are sent as IP data packets.

"You're no longer tied to a location where your telephone systems are terminated [when you use the IPCC]," Wasierski said.

- James Cope

Outsourcing Wave Hits Japanese Market

Economy prompts firms to try to trim costs

BY JULEKHA DASH

Priding themselves on their self-reliance, Japanese companies have historically resisted outside help with their IT systems. But facing today's shaky business climate, many firms are growing more receptive to outsourcing as a way to boost their operating efficiency and upgrade IT systems.

"The Japanese economy is close to recession," said Ross DeVol, director of regional and demographic studies at the Milken Institute in Santa Monica, Calif. Companies are trying to find ways to recover their profits, and one way to do that is by outsourcing, which is a relatively new trend in Japan, he added. "Japan overall is probably four to five years behind the curve in outsourcing."

Spending on IT outsourcing in Japan reached \$8 billion last year and is expected to exceed \$15 billion in 2005, according to a recent report from IDC in Framingham, Mass. Those figures are roughly one-third of the same market in the U.S., which spent \$25.7 billion on IT outsourcing last year, compared with a projected \$44 billion in 2005, according to IDC.

"Japanese companies are being pressured by the economy to improve their financial performance," the report stated. "Therefore, companies are shifting their IT capital investments to operating expenses by outsourcing their IT infrastructures."

Last year, outsourcing, systems integration and other IT services in Japan grew by 24% for Somers, N.Y.-based IBM Global Services, according to Bob Zapfel, general manager of outsourcing services. And Tokyo-based Fujitsu Ltd. has seen its outsourcing business in Japan grow at an annual rate of about 26%, according to the company's Web site.

Like their U.S. counterparts, some Japanese firms are look-

ing to replace older IT systems with new ones that provide e-business capabilities. That was a main driver for the 10-year, \$664 million outsourcing deal that Tokyo-based Japan Airlines Co. signed with IBM Japan Ltd. in June, said Jeffrey Tudor, a spokesman for Japan Airlines.

Japan Airlines wanted to "be more competitive in the IT field," said Tudor. The company wanted to replace legacy systems with new e-business systems, such as an online travel support system for small

businesses, and didn't feel that it had the resources in-house to do it, he said.

Many large Japanese enterprises are just starting to throw out their legacy systems, which have been a financial burden and an economic drain, said Satoshi Yamanai, an analyst in Japan for Stamford, Conn.-based Gartner Inc.

In the long term, some Japanese companies expect that outsourcing will help them save money. Last year, Osaka-based Sharp Corp. and IBM Japan formed a jointly held company that will develop enterprise resource planning and supply chain manage-

Help From the Outside

IBM's recent outsourcing deals with Japanese companies:

Japan Airlines: More than \$646 million over 10 years

Honda Motor Co.: Terms not disclosed

Juroku Bank Ltd.: \$380 million over 10 years

Sharp: \$850 million over 10 years

Nissan Motor Co.: More than \$1 billion over 10.5 years

Sumitomo Metal Industries Ltd.: \$660 million over 10 years

Mitsui Mutual Life Insurance Co.: \$1.4 billion over 10 years

JACCS Co.: \$370 million over 6.5 years

Daishi Bank Ltd.: \$270 million over 10 years

Meiji Life Insurance Co.: \$533 million over 10 years

ment technology for Sharp.

Though the financial terms of the deal weren't disclosed, Arisa Mori, a spokeswoman for Sharp, said the company expects to save as much as 20% in

expenses. Japanese firms are becoming more culturally open to outsourcing by "reconsidering the strategy of doing everything themselves in the company," said Mori. ■

NSA Outsourcing Deal Seen as Key to IT Modernization

Intelligence agency signs \$2B contract

BY DAN VERTON

A \$2 billion-plus outsourcing contract that the National Security Agency (NSA) awarded last week to a vendor team led by Computer Sciences Corp. (CSC) is expected to play a key role in the effort to revitalize the intelligence agency's Cold War-era IT infrastructure.

The 10-year deal, called Project Groundbreaker, is due to take effect in November. It's one of the largest government outsourcing moves to date and will result in the transfer of at least 750 IT workers from the NSA to CSC and its partners.

As part of the deal, the NSA will hand over responsibility for four major IT functions to the team put together by El Segundo, Calif.-based CSC. The scope of the contract may also be expanded, the company said. Groundbreaker was originally envisioned as a \$5 billion initiative, and CSC said its value could still reach that level.

The NSA, which operates the world's largest pool of supercomputers, will continue to manage the systems that are central to its role of intercept-

ing and analyzing foreign electronic communications. The outsourcing deal will focus mainly on filling gaps in day-to-day IT support activities such as network management.

"The new contract should help the agency to upgrade its IT infrastructure more quickly and allow it to focus more efficiently on its core functions,"

Breaking Ground

The NSA's IT outsourcing deal Project Groundbreaker is set to take effect in November. It includes the following highlights:

■ **Planned duration:** 10 years

■ **Projected value:** At least \$2 billion, and potentially as much as \$5 billion

■ **Number of affected IT workers:** 750

■ **IT activities being outsourced:** Distributed computing, enterprise/security management, network operations and telephony

■ **Expected benefits:** Quality of service improvements, continuous modernization of systems and cost savings

said Steven Aftergood, an intelligence analyst at the Federation of American Scientists in Washington. "The whole NSA modernization program is a work in progress."

Groundbreaker is an important component of a major overhaul of the NSA that was kick-started two years ago by its reform-minded director, Lt. Gen. Michael Hayden. He said late last year that the agency "must immediately begin to invest in our IT infrastructure" in order to remain successful in its signals intelligence and information security work.

"Hayden knew that he needed to concentrate on NSA's core mission but had an aging [IT] infrastructure," said Olga Grkavac, an executive vice president at the Information Technology Association of America, an industry trade group in Arlington, Va.

The agency last year said it planned to pursue an outsourcing deal, and it issued a classified request for proposals in March. CSC and its team won the contract over two other groups led by AT&T Corp. and OAO Corp., an IT services provider in Greenbelt, Md.

The planned transition of

the 750 NSA employees to CSC remains a sensitive issue. CSC spokesman James Sullivan said the company has "clearly been incentivized by the NSA to do this well." The contract announcement specified that CSC will receive monetary incentives to hire the workers and offer salaries and benefits that are equal to or better than what they currently receive.

An NSA spokesman said more workers could shift to the CSC team's workforce voluntarily if they want to do so. But targeted employees can also apply for other available jobs within the NSA, and no one at the agency "will lose their employment," he added.

"It's not the technology, it's the cultural issues that are going to be most difficult," said Chip Mather, senior vice president at Acquisition Solutions Inc., a federal procurement consulting firm in Chantilly, Va. Contracts of this size "add such a degree of complexity that they require extraordinary effort," he noted. ■

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Corporations Tackle Legacy Data Woes

Tools separate interface from app logic

BY LEE COPELAND

PRUDENTIAL Financial is creating a new look for its corporate data in a bid to cut its legacy application maintenance tab.

The Newark, N.J.-based insurer plans to channel its data through an interface server — a technology infrastructure strategy designed to beef up transaction processing power by taking the presentation layer off of its mainframes.

"The interface work is like changing the clothes after you've built Frankenstein," said Jane Landon, CIO at Prudential. "We're not going to go back and retrofit our applications. But for those applications that are still green-screen or where there are multiple front ends, we'll see consolidation and expense reductions."

The legacy data makeover project involves separating the business logic from the presentation scripting code on

IBM AS/400 applications in Prudential's voluntary benefits division.

Landon estimated that approximately 90% of those applications contain overlapping business functions. But by separating the business from the presentation rules, she explained, the company can offer customized front ends to its end users without having to rewrite the core applications. Prudential plans to deploy the new system this month.

Using Jacada Interface Server 7.0, which was launched last week by Atlanta-based Jacada Ltd., the \$26.5 billion insurer

The Features That Count

For legacy data extension projects, key product features include:

- XML translation to ensure that your code can be accessed and read by other applications
- Java and Component Object Model support to ready applications for Web services
- Secure Sockets Layer to secure links between host and client applications
- Java, Visual Basic and HTML support with which developers can create standard GUIs

will also be able to control the data types that are presented on graphical user interfaces.

Extracting and transforming data in new ways can help

companies get extra mileage out of legacy systems, said Darcy Fowkes, an analyst at Aberdeen Group Inc. in Boston. But this process may hurt productivity if users aren't familiar with the new presentation format, she said.

Like Prudential, Southern General Financial Group wants to keep its valuable legacy business logic yet provide new types of presentation formats, such as a Web browser or cellular phone, to its agents, said Robert Leedy, chief technology officer at the Atlanta-based firm.

Southern General currently processes policy changes in batches at night, then prints out the new policies and sends them to the agents via standard mail the next day. Leedy said that process slows down the insurer's agents and racks up about \$1 million in extra costs per year.

To offer real-time, Web browser-based access to its AS/400 applications, Southern General is implementing Atlanta-based Seagull Software Systems Inc.'s Transidiom product. Using C++ objects and XML to describe the data, the insurer was able to create a channel for funneling outgoing data from its AS/400 farm to Web browsers in real time.

That new infrastructure will cut maintenance and improve the flexibility of its back-end systems, said Leedy.

For corporations with extensive investments in mainframe and midrange systems, this type of flexibility is critical because of the need to provide data access to the Web and wireless devices, said Mark O'Shaughnessy, manager of field and retail systems at Saab Cars USA Inc. Norcross, Ga.-based Saab is also piloting the Jacada Interface Server.

"This [legacy code] is like a rock — very stable and very fast — and it would cost millions to replace it," he said. "Now it doesn't matter what device is at the other end."

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Scient, iXL Merge in Wake of Financial Struggles in Internet Consulting Sector

Venture to broaden range of services

BY JULEKHA DASH

The merger of two struggling Web consultancies will enable the combined firm to offer more resources to clients but won't necessarily ensure financial recovery because its services may still be out of reach for some customers in the current slumping economy.

Last week, New York-based Web consulting firm Scient Corp. and Atlanta-based interactive agency iXL Enterprises Inc. said they would merge in an all-stock deal, which is expected to close by December. Both were among the crop of Internet consultancies that quickly acquired new clients during the Internet boom but whose revenues plummeted as the economy slowed.

In a statement, the companies said they will become subsidiaries of a new parent com-

pany in New York and operate under the Scient name.

Last week, both iXL and Scient announced revenues for the quarter ended June 30 that were significantly lower than the same period last year (see chart).

Other Web consultancies, including Cambridge, Mass.-based Sapient Corp. and New

York-based Razorfish Inc., have also been plagued by financial losses and layoffs in recent months.

iXL Chairman Bert Ellis said that the consulting industry suffers from "significant overcapacity" and that "consolidation must happen" in order to attain a "more efficient cost structure."

By combining their expertise in Web design and Web consulting, iXL and Scient could offer more comprehensive services to clients, said Keith Landis, a senior vice president at Carlisle, Pa.-based Campus Door Inc., which provides student loans. Scient provided business strategy and IT consulting and support services to Campus Door until the end of last year.

Campus Door found that once it was up and running, it no longer needed Scient, particularly because Scient's services were "not the cheapest," said Landis.

Santa Monica, Calif.-based

Revenue Free Fall	
SCIENT	
Revenue for the quarter ended June 30, 2000	\$91.4 million
For the quarter ended June 30, 2001	\$11.3 million
iXL	
Revenue for the quarter ended June 30, 2000	\$118.4 million
For the quarter ended June 30, 2001	\$32.7 million

online mail services company Stamps.com Inc. stopped using iXL at the end of last year because hiring a consultancy isn't cost-effective compared with handling things in-house, said Dave Dreyer, Stamps.com's director of marketing. He said Stamps.com no longer needed the "same level of expertise" to develop an interactive marketing strategy because the number of new customers it acquires has remained steady.

The experiences of Stamps.com and Campus Door indicate overall demand for Web consulting is falling because of the economic slowdown and because many companies have already established Internet strategies, said William Martorelli, an analyst at Hurwitz Group Inc. in Framingham, Mass. As a result, many Web consulting firms have been struggling financially, he said.

Though merging could improve the merged company's financial situation by eliminating redundancies, Scient needs to "broaden its capabilities beyond Web implementation" projects in order to remain in business, said Martorelli.

Reporter Linda Rosencrance contributed to this report.



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Scoring Big With Golf Fans

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IBM Tries to Sell Grid Computing

Aims to cluster servers, but analysts are skeptical about corporate uses

BY TODD R. WEISS

AFTER MAKING a big investment in Linux technology, IBM is now betting corporate users will buy into another emerging but still unproven open-source concept: grid computing.

The idea, which is also being eyed by Sun Microsystems Inc. and Microsoft Corp., provides a way to link servers in multiple locations and combine their computing power. Grid computing originated in universities and research institutions, but IBM last week announced an initiative aimed at both scientific and business uses.

IBM detailed plans to build a worldwide grid using systems at its various data centers. Users would pay for processing time on an "e-utility" basis. The company is also grid-enabling key

products and offering to help develop and manage grids for users.

IBM said it has been chosen by the British government to work on just such a system as part of a national grid being built at various universities for collaborative scientific research.

But much remains up in the air. IBM officials didn't disclose a schedule for completing the company's own grid or how usage of it will be priced.

Grid computing itself is also still a work in progress. "This is a vision, and visions don't necessarily come true," said Tony Hey, director of the U.K.'s Office of Science and Technology. "But it

has the potential to be as significant as the Web."

"We see this as being very applicable to e-business," said John Patrick, vice president of Internet technology at IBM.

"It has some further maturing

to do, but we're quite confident... that we can get there."

Analysts were more skeptical about whether corporate users will accept grids, which are built with clusters of servers, standard security measures and open-source protocols and soft-

MOREONLINE

For more information about Linux and open source, go to www.computerworld.com/linux.

Continued from page 1

IBM

and that he has a new IBM zSeries 900 mainframe on order. The Fibre Channel link will let Poole reduce the number of I/O channels he needs to support from eight to just two, he said.

The new capability should also help Boscov's postpone the need to add more channels and give it increased flexibility on data storage, Poole added. "Our options are now wide open on how we use these channels," he said.

Boscov's owns 34 stores in the eastern U.S. and processes 6 million customer and supplier transactions per week. Poole said the new systems and the Ficon technology should put him "in a much better position to keep up with the demands of the business."

David Hill, an analyst at Aberdeen Group Inc. in Boston, said the Fibre Channel support should be an important advancement for mainframe users

Out From Under The Bridge

IBM already supports Fibre Channel on its mainframes, but users have to connect through a bridge card that plugs into their Escon communications control units. The company said the direct Fibre Channel link will:

- Provide 3.5 times more bandwidth per channel.
- Support almost 5 times more I/O operations per second.
- Increase support for disaster recovery applications from 9 km to 100 km.
- Be able to handle 16 times more devices per channel.

because it will extend their ability to knit the systems into open SAN fabrics alongside Unix and Windows boxes.

The new technology may also provide relief to IT managers whose SANs

No More IT Gridlock?

IBM said grid computing could be used to aggregate IT resources and share remote databases. The technology would work like this:

■ Servers in different locations would be connected via the Internet to pool system resources, which could be accessed by multiple users.

■ Open-source protocols and software developed by the Globus Project, a research initiative funded by various U.S. government agencies, would let the different systems share data and computing power.

ware. Users could get performance improvements by dynamically shifting processing workloads across grids of servers, said Dan Kusnetzky, an analyst at IDC in Framingham, Mass. But the challenge for vendors, he added, "is that most commercial applications don't work [that] way."

Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H., said the clearest use for grid computing remains in the research field, at least for now.

For business users, Patrick said, benefits could include the creation of a virtual computing environment providing e-commerce Web sites with almost limitless capacity backups. Companies could use grid network resources on demand and pay usage fees, he added. ▀

are maxing out on storage capacity, said Mike Kahn, an analyst at The Clipper Group Inc. in Wellesley, Mass. Capacity could be expanded relatively cheaply by tying in existing mainframes and Shark arrays, he said.

However, IBM said it won't disclose pricing details on the Fibre Channel link until closer to the scheduled shipment date. The plan to add support for Shark devices follows IBM's release late last year of native Fibre Channel connectivity for the control unit in its Magstar 3590 tape subsystem.

IBM also introduced a separate serial disk controller designed to provide Fibre Channel storage connectivity for its own Unix servers and rival ones made by Sun Microsystems Inc. and Hewlett-Packard Co., as well as systems running Windows NT and 2000.

In addition, it added two new versions of a tape server that supports multiple hardware platforms, saying their data transfer rates will be twice as fast as the current models. The new ones are due at the end of this month. ▀

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Retailers, Travel Companies Deploy Thousands of Kiosks

Success of fad depends on bandwidth, network uptime, user-friendliness and ROI

BY STACY COLLETT

SHOPPING FOR an above-ground swimming pool this summer? Don't expect to find a wide selection at the cramped Kmart store in Herndon, Va. Instead, shoppers can go to one of two desktop kiosks — the ones below bright BlueLight.com signs — and check out a variety of pools that can be shipped in three to seven days.

For Kmart Corp., the Web-connected kiosks are an effort to "save the sale," allowing customers to buy merchandise not available at stores.

This isn't new territory for Kmart. The Troy, Mich.-based discount retailer has been flirting with kiosk programs since the early 1990s, but with little success.

The problem then was that maintaining a large kiosk network was expensive. "You had to hire a ton of people for maintenance, and a lot of the technology was shaky," recalled Dave Karraker, a spokesman for BlueLight.com LLC, a Kmart unit that handles Internet and kiosk sales. What's more, customers saw little need for kiosks at the time, he added.

Those systems, built on each store's LAN, would often crash, and when products or a kiosk feature needed updating, technicians would have to visit each store to make the changes.

But now, Kmart has placed

its bets on Web-based kiosks that mimic its BlueLight.com Web site. Some 3,500 kiosks occupy 1,100 U.S. stores. The new kiosks eliminate many IT department headaches by updating products and information simultaneously in all of the stores.

So far, the kiosks are paying off big. Since launching the kiosks in January, 20% of BlueLight.com's site traffic has come through the kiosks. That's twice as much as expected, according to Karraker.

Thousands of retailers and service providers are hoping for the same results as they add kiosks through which customers can order furniture, burn custom music CDs, check in at the airport, rent cars and even order a newborn's first photographs at the hospital. Jupiter Media Metrix Inc. in New York predicts that consumers will purchase almost \$200 million in goods and services through kiosks this year and \$6.5 billion by 2006.

So far, the most successful kiosks have been ones that help consumers research or locate products or fulfill orders (such as airline check-in kiosks) or that extend shelf space by offering unusual or bulky products.

But some companies may be deploying kiosks without such a clear idea of the purpose or payoffs. "We find that [enterprises] are interested in kiosks

... but their thoughts about what's the value to the consumer and the enterprise are not very well formed. It's just something that's cool," said Carol Ferrara, an analyst at Stamford, Conn.-based Garner Inc.

Infrastructure Requirements

There's more to Internet-based kiosks than simply making a Web site available at a store location. The No. 1 IT requirement is a high-bandwidth, reliable network.

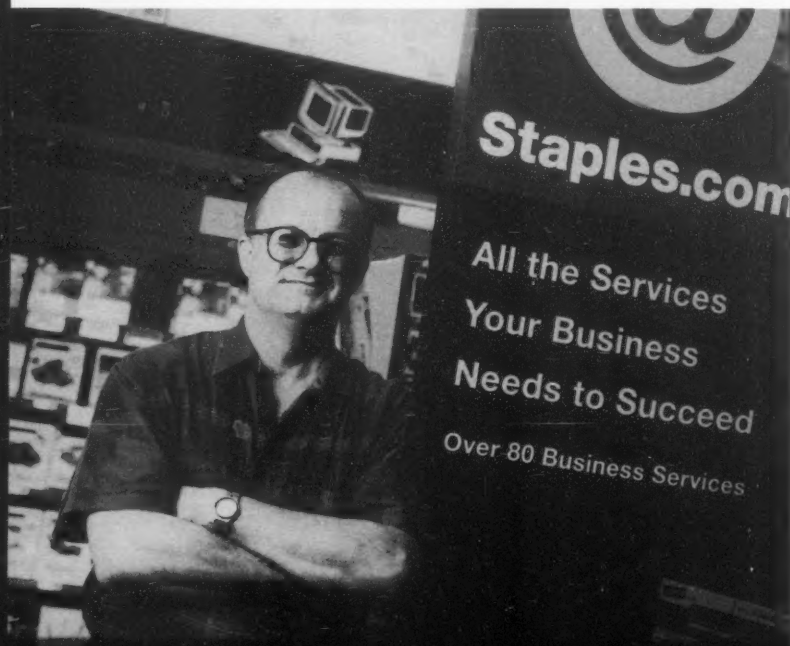
"We're finding retailers don't have the infrastructure in their physical stores to support the connectivity requirements of a Web-based kiosk," Ferrara said. "It's not something a lot of retailers have invested in, and it's probably not prudent to invest in it just for the sake of a kiosk."

Response times are also critical. Customers may be willing to tolerate slow response from a Web site while sitting at a home PC, but they're far less tolerant standing at a kiosk in a store, Ferrara said.

Companies that want kiosks but lack the IT staff to support them often hire hosting services, at least initially, to see how much usage and revenue the kiosks generate.

For example, Netkey Inc. in Branford, Conn., and Auto-pulse Inc. in Raleigh, N.C., are jointly rolling out kiosks for Raleigh-based Lucor Inc., the nation's largest franchisee of

MAX WARD, vice president of technology at Staples, and his staff monitor network activity to help the company's 2,500 in-store kiosks stay online. ▼



WILL CHAPPELL





In a given store, there are 13 different devices that can connect into our system directly or over the Net.

MAX WARD, VICE PRESIDENT OF TECHNOLOGY, STAPLES INC.

Jiffy Lube International Inc. stores.

NCR Corp. in Dayton, Ohio, is another kiosk-hosting provider. It claimed a tenfold increase in its Web kiosk business last year.

Retailers with robust data networks can handle kiosks themselves. In January, office supply retailer Staples Inc. installed more than 2,500 kiosks in 954 stores. The kiosks emulate the Staples.com Web site, but at the store, customers are able to order products online and pay at a cash register.

This is possible because in the late 1990s, Staples installed a frame-relay network with circuits that carry integrated voice and data. "In a given store, there are 13 different devices that can connect into our system directly or over the Net," such as cash registers, telephones and back-office software, said Max Ward, vice president of technology at Framingham, Mass.-based Staples.

The IT department constantly monitors the network status to avoid downtime and has trained the help desk to handle problems that might occur inside the stores. The kiosks combine IBM thin clients with laser printers.

At the Staples store in Sterling, Va., store manager Steve Saunders said that he has experienced few problems with the thin clients and that customers need little assistance with them. All sales associates are trained in kiosk operation, and each has to pass a test on its use, he added. If problems do occur, Staples' help desk contacts a contractor handling support and repairs for the kiosks.

Kmart's IT department maintains the hardware and Internet connections at the company's stores. The department also provides ongoing technical support through a toll-free number. Kmart associates have been trained on kiosk use and are responsible only for assisting customers and keeping the keyboard and monitor clean and powered up.

Built to Last

Ruggedness is important, because kiosks can take a beating. Alamo Rent A Car LLC lets hurried customers rent cars online and use kiosks at airport locations to check out quickly. But the kiosk enclosures have to be sturdy, said Rickie Hall, vice president and CIO at ANC Rental Corp., Alamo's parent company, in Fort Lauderdale, Fla. "If you dropped a Coke on them, it wouldn't bother it," she said.

Hall added that Alamo must also consider factors such as sunlight and the angle of the screen, because kiosks are placed at indoor and outdoor locations.

Kiosk Mania

Businesses are deploying hundreds of Web-connected kiosks for a variety of applications, from baby photos to airline check-in.

Company	Application	Locations
Barnes & Noble Inc. New York	Customers can order books from Barnes & Noble's Web site at Internet service counters. Also, a touch-sensitive customer kiosk tells shoppers where to find CDs in the store.	Web-enabled kiosks were launched in newly opened stores last year. The bookseller is now rolling out kiosks in 559 older stores.
Harris County Hospital District, Houston	Interactive touch-screen kiosks in waiting rooms provide statistical data and general patient information.	Sixty kiosks have been installed in 16 public health care facilities.
Power Kiosks Inc. Markham, Ontario	Parents can obtain newborn-baby photos at the hospital. The kiosks have on-site photo-production capabilities, including the ability to digitally add backdrops and themes to baby pictures.	The company plans to place 150 kiosks in hospital maternity wards by year's end.
Various airlines	Airlines are installing automatic check-in kiosks to help customers bypass long lines.	There are dozens of kiosks in the largest U.S. airports. United Air Lines Inc., for example, plans to have 1,000 kiosks in 50 airports by 2003.
McDonald's Corp. Oak Brook, Ill.	McMagination kiosks allow children aged 4-15 to play the latest video games via an in-store computer system. Games are updated every six weeks.	Test marketing is being conducted at a dozen sites. The systems are powered by Compaq Computer Corp.

For day-to-day maintenance, shift managers are trained on kiosk use and have a small guide with instructions on changing printer paper or monitor lighting. All IT issues are handled through ANC's centralized help desk. If the problem can't be fixed by phone, ANC technicians go on-site. As a last resort, IBM, which makes ANC's kiosks, is called in. "You try to keep IBM for the very last because it's the most expensive [option]," Hall noted.

Usability is another critical success factor. "Create a nice, simple interface. It has to be a clear task that the kiosk is completing. You don't want the customer to find that the kiosk isn't doing what they

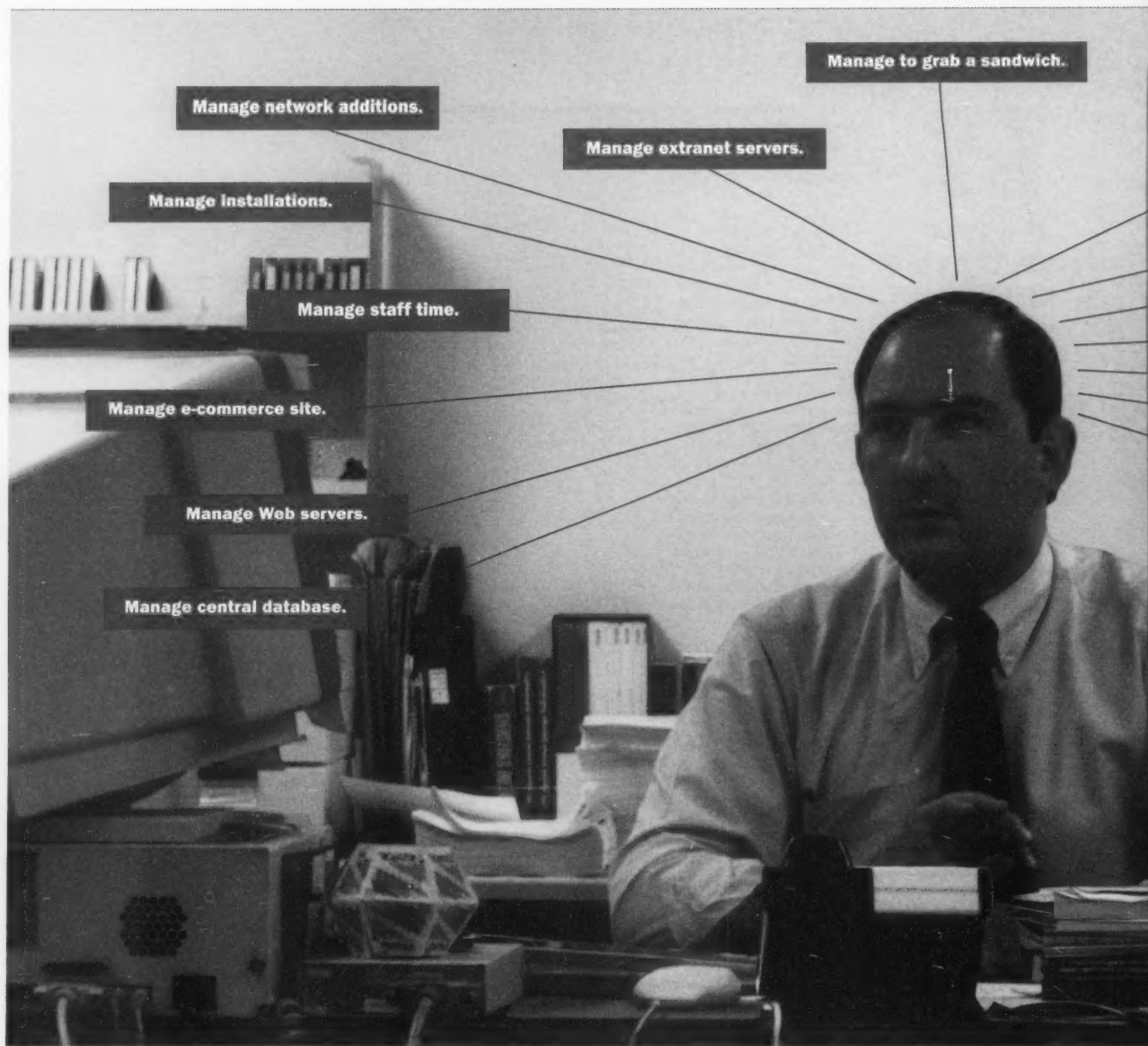
expected it to do," said Heather Dougherty, an analyst at Jupiter.

The potential of Web kiosks is still untapped in many markets. Consumers say they're willing to rent movies, purchase event tickets, make bill payments and create customized products at kiosks, Jupiter's research found.

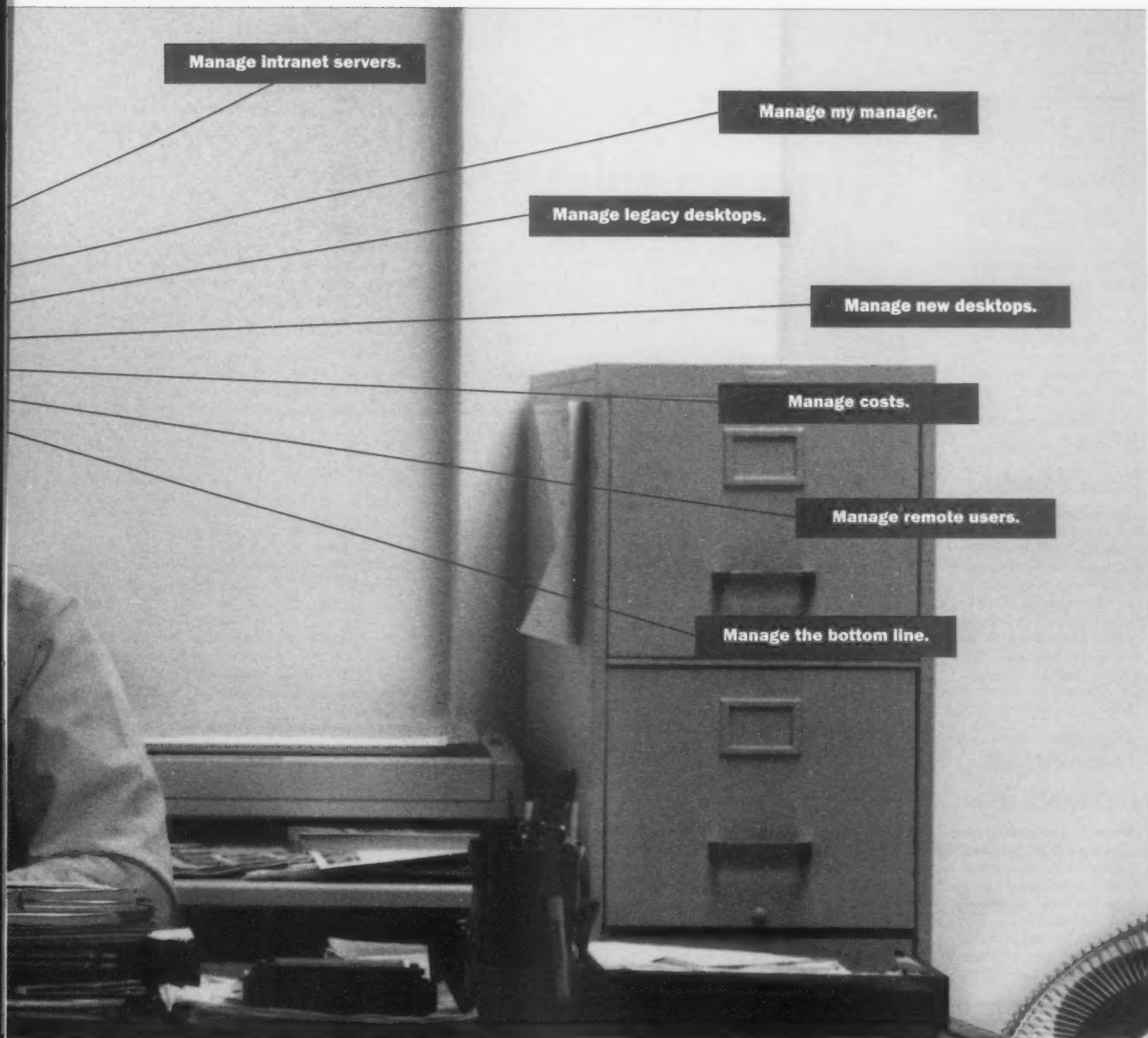
But those services will require kiosks that have card scanners, printers and additional security features, all tied to a central host and reliable network. "If it's down all the time," Ferrara said, "customers will absolutely never go back." ■

Collett is a freelance writer in Sterling, Va.





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Microsoft

BRIEFS

CSC Profits Off 50%
In Its First Quarter

Computer Sciences Corp. reported a 50% drop in net income for its first quarter ended June 29. The El Segundo, Calif.-based consulting and IT services firm said profits fell to \$47.7 million from \$96 million in the year-earlier period but revenue rose 10% to \$2.7 billion from \$2.5 billion a year ago.

Baltimore Lowers
Reported Revenue

Struggling security software vendor Baltimore Technologies PLC said its revenue figures for last year's fourth quarter and this year's first quarter were overstated. Dublin-based Baltimore expects to lower its revenue for all of last year by 5.5% to \$99.9 million and cut its first-quarter revenue figure by 3.4% to \$32.6 million. It blamed the problem on "incorrect contract classifications" by now-former employees.

Palm Splitting Into
Two Separate Units

Palm Inc. announced plans to split its operations in two, with one unit focusing on the company's handheld devices and the other managing the licensing and development of its operating system. Santa Clara, Calif.-based Palm said it's trying to "foster the independence" of the two businesses.

RSA Security to Buy
Authentication Vendor

Bedford, Mass.-based RSA Security Inc. announced a deal to buy Securant Technologies Inc., a San Francisco-based developer of user authentication software, for \$136.5 million in cash plus unspecified acquisition costs. RSA said the purchase should be completed this month and is expected to produce up to \$11 million in new revenue during the second half of the year.

Oracle Users: More
Time on Old Software

Longer support would delay major upgrade

BY MARC L. SONGINI

LOOKING TO DELAY A big systems upgrade, a group of more than 50 companies that use Oracle Corp.'s business applications is calling on the vendor to drop its plans to stop supporting a still widely installed software release at the end of next year.

The users last month signed a petition asking that technical support of Oracle's Release 10.7 applications be continued for another two years so they can put off the cost of upgrading to Oracle's new E-Business Suite

11i software. That would also give Release 10.7 users more breathing room than they have gotten from several extensions that Oracle already made.

The companies seeking the two-year extension include

Nike Inc. in Beaverton, Ore.; Wells Fargo Financial Inc. in Des Moines, Iowa; Goodyear Dunlop Tires North America Ltd. in Buffalo, N.Y.; and Borg-Warner Cooling Systems Corp. in Marshall, Mich.

"We're pretty much blown away by the prospect of another implementation or update

less than three years after our go-live [date for Release 10.7]," said John Holdeman, plant IT manager at Borg-Warner. "We kind of expect a five-year life cycle for major releases like this," he added.

Holdeman said the year-old 11i software has new functionality that makes it attractive to Borg-Warner. But, he added, the company "doesn't want to spend another \$2 million doing an implementation" so soon after installing Release 10.7.

Holdeman said he would also like to be able to stop worrying constantly about planning an upgrade. Oracle "could very well come up with another six-month extension, and people will breathe with a sigh of relief," he said. "But doing six-month bites is not very helpful."

Oracle first said it wanted to stop supporting the 10.7 applications at the end of last year, but it has announced a series of extensions since late 1999. The current date was set in June, when Oracle said support would continue for another six months past the previous mid-2002 deadline.

But the users who are asking to have support extended through the end of 2004 said they want enough time to get their money's worth on Release 10.7. Their petition noted that many users were forced to migrate to 10.7 to make their systems Y2k-compliant.

"Even for companies desiring to migrate to 11i, many are not strategically or financially positioned to immediately abandon current technologies in favor of it," the petition said.

An Oracle spokeswoman said the vendor is still considering the request. She said the company wants "to do as much as we can to help people."

A source at the independent Oracle Applications Users Group in Atlanta said the group discussed the support issue with Oracle executives last week. The source added that Ron Wohl, who heads applications development at Oracle, offered to speak with some of the petitioners in an effort to set a mutually agreeable desupport date for 10.7. ■

A Question of Support

Oracle's Release 10.7 applications are still used by many companies. Newer versions of the software offer only Web-based user interfaces, which is why some users want to delay upgrades.

Dec. 2000	Dec. 2002	Dec. 2004
Oracle's original date for ending 10.7 support	Current date for end of support, announced in June	New date requested in user petition

Wyly Details His Plan for CA

Would split vendor
into four units

BY MARC L. SONGINI

Entrepreneur Sam Wyly last week announced the details of what he plans to do with Computer Associates International Inc. if he succeeds in taking over management control of the software vendor.

Wyly claims that CA users will be better off if the company is split into four independent pieces. Under his plan, the separate business units would each be free to sell to new and existing corporate accounts.

The business units would also have their own services organizations under the proposal made by Ranger Governance Ltd., Wyly's Dallas-based investment firm.

The plan would create an "elite national account organization" to work with users who still want a single point of contact. But Ranger said "autonomous business units provide an excellent opportunity to improve customer support by moving the company closer to its customers and their specific, rapidly evolving needs."

It added that the services organizations tied to each business unit would be limited to

work that "relates directly to CA products." That matches a strategy already being put in place by CA following a drop-off in its services business during the company's fiscal first quarter ended June 30.

Islandia, N.Y.-based CA didn't issue a formal statement after Wyly's plan was announced, but outside spokesman Owen Blinksilver said the restructuring proposal is "unworkable." Splitting the company into separate units "is not an effective way for CA to run its business, and not the way the customer base wants it to run its business," he said.

Blinksilver added that CA currently assigns client relationship managers who oversee all of its dealings with large users. Working with the managers are sales teams that specialize in specific technologies. "It sounds as if what Mr. Wyly is proposing... is already there," Blinksilver said.

Wyly is staging a proxy fight to win control of CA at the vendor's annual shareholders meeting on Aug. 29. If successful, he would replace CA board Chairman Charles Wang and appoint a new management team. ■

What Could Happen at CA

If his proxy fight succeeds, Sam Wyly plans to:

- Create four business units with separate responsibility for storage management, security management, network management and knowledge management products.
- Hire a CEO for each business unit and have the four executives report directly to CA's board of directors.
- Assign corporate finance and legal duties and a proposed national account sales team to the knowledge management unit.

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Mobile business



MARYFRAN JOHNSON

Zero Tolerance

WHEN WE PUBLISHED A STORY two weeks ago about the growing gay IT workforce [Business, July 23], we braced ourselves for the expected backlash of homophobia, outrage and canceled subscriptions. Sure

enough, they poured in. There were a few dozen complaints about how *Computerworld* was advancing "the gay rights political agenda" and neglecting our mission to write about technology. "Since when did sexual orientation have anything to do with IT?" one reader wrote.

Since when did technology implement itself without humans involved?

Some of the responses struck a more polite tone, while others were far from subtle in voicing their anger. "You want everyone openly talking about homosexuality," accused one reader. "Why not bestiality and pedophilia, as long as the topic isn't work?" "Will you now do [a story] on the number of IT people addicted to pornography and rank the major cities in the U.S. according to that 'standard'?" asked another.

We've had similar backlash about "inappropriate" stories in the past, when we've written about Indian workers, H-1B visas, African-Americans and Hispanics in high-tech, disabled workers and even women IT executives. The level of vituperation



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tive response is usually more muted — more politically careful, I suppose — but the undercurrent of intolerance is still there.

The objections often center on the notion that people issues — basic human concerns about how we live our lives at work — have no place in a publication devoted to IT management. That attitude is both baffling and wrong. At the very heart of technology are the people who use it, run it, understand it, fix it and, ultimately, manage it. Those people are an increasingly diverse lot — thankfully so.

From all that variety springs the unexpected idea, the surprising solution, the ability to "think different."

The IT profession must attract a more varied mix of people if it's going to achieve the increasing number of corporate business goals dependent on technology. What matters most in the technical workplace is a person's intellectual abilities. What will attract and keep the best people is a zero-tolerance policy for bigotry. ▀

PIMM FOX

Managing Vendors Is As Easy As 1-2-3

IN THE RUSH to quantify vendor relationships, little emphasis is placed on measuring the total cost of ownership other than calculating the price of an application and an ongoing service contract.

What Terry Burnett, a former IT executive at AT&T, calls "shadow costs" rarely get any scrutiny. Over the life of a contract, "incremental costs can drastically alter the total cost of ownership," he says.

These shadow costs include lawyers to draw up new contracts, hardware and software testing, personnel training, even the time and routine to contact a vendor if something goes wrong. And these costs continue forever.

So, you've got to get a handle on your true vendor costs.

According to Gartner Inc., by 2003, organizations that implement a strategic vendor-management program will more effectively address business needs and reduce the number of failed projects by 25%.

The first step is to segment vendors into one of three vertically ranked groups.

Place key vendors at the top. They're identified by how much money you spend with them and how critical their products are to your business. If your data center goes down because of one company's application, that's a key vendor. These are the ones with whom you wish to have — and build — strategic partnerships.

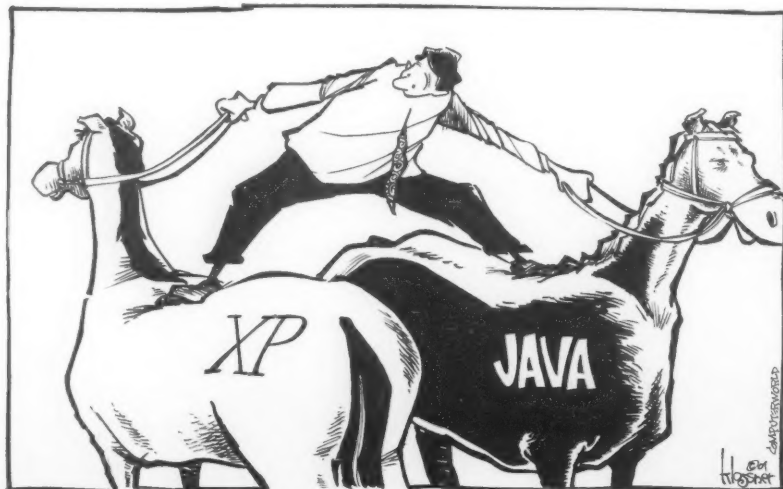
The middle group of vendors isn't critical, but their products are easily affordable commodities, and the price of those products is the sole factor in doing business with them.

The final category is vendors you'd like to be rid of — ones that lack responsiveness and reliability and whose senior management has trouble understanding your business.

The purpose of strategic vendor management is to move as much business as possible away from those vendors you can't stand and toward those that offer a viable commodity or toward those that you hope will work with you over the



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long term to realize your business goals.

Burnett says IT organizations should "move away from the bottom feeders and create a value proposition for both the buyer and the vendor."

After ranking the vendors, create vendor account-management teams made up of the people responsible for managing and evaluating a vendor relationship.

These teams meet with vendors' account managers to go over problems or issues. That's what's meant by a partnership.

"Bad vendors can't hide from these teams," says Burnett. "They can't use their personal relationships to go around the business relationship."

The result may be a long-term relationship with a vendor that cares as much about your business as you do. Indeed, good vendors should welcome this scrutiny. ■

BILL LABERIS

Seeing Ahead Into A Bleak Future

HERE ARE A FEW prognostications that reflect my 21 years in this business.

The economy. Twenty-five years ago, President Ford tried to jolt a moribund economy to life with "WIN" buttons, for "Whip Inflation Now." I'd like to reissue those, echoing a quip of that time that you wear them upside down to read "NIM," for "No Immediate Miracles."

The most important fact for you to confront as a manager is that the economy isn't going to turn around soon. We won't bottom out until sometime next year, when quarterly earnings start to look good even if only in comparison to this year's numbers.

Only then will investor confidence return — I'm talking big institutional investors — lifting the market in a sustained fashion and boosting consumer confidence. A recovery will be sustained at that time by the just-enacted tax cuts and a business-friendly Bush administration.

Until that time, perhaps a full year out, IT managers will be asked to do more with less staff, less investment, less risk and probably less job satisfaction. But cheer up. The U.S. during the Ford and Carter years had to deal with 18% interest rates and 12% unemployment. This is a cakewalk by comparison.

Security suffers. Just as war is too important to be

left to generals, finance is too important to be left to CFOs. The creaky economy has refocused CFOs' cost-justification lens on projects with the most demonstrable ROI.

That means IT managers responsible for data security will increasingly face a dilemma, because it's exceedingly difficult, if not impossible, to perform any kind of ROI analysis on security projects. ROI in security is tied up in what the company won't pay as a result of having implemented strong, cogent security measures.

I won't go out on a limb and predict any major security failures or breaches resulting from stingy security investments. But if they do occur, I predict — in fact, I know — it won't be the CFO's neck in the noose.

Carly, we hardly knew ye. Hewlett-Packard's CEO, Carly Fiorina, will be gone from the company before the recovery hits. I have "scientific" evidence that she's in bigger trouble than you might think, and not simply because of HP's 50% stock price plunge within the past four months.

For one thing, her face is starting to show up (again) everywhere. Experience tells me that whenever CEOs stoke up the PR engine, it's usually because they sense trouble. More important, I've spoken with some longtime HP managers recently, and not one of them likes her style and what she's doing at HP to change the culture and direction of that 93,000-person behemoth.

Unless she plans to replace most of her managers, she can't lead without their support. You can't change a culture created over 60 years in a few quarters, unless you want to destroy it, which I believe she does. Sorry, but HP needs a kinder, gentler change agent. I hear Lou Gerstner will be available soon.

Microsoft über alles. As Microsoft frees itself from the worst of the Justice Department's intended shackles, it will be able to prey upon an industry that's far more weakened than it was when Microsoft committed all of its alleged wrongdoings. Heaven help the companies that put Microsoft on the hot seat in the first place. ■

READERS' LETTERS

Gays in the Workplace

IRELY ON *Computerworld* for information that's pertinent and relevant to the IT world. With all due respect, your credibility plane just crashed into the side of a mountain. The last place I expect to be assaulted by pro-homosexual propaganda is in this fine newspaper ["The Growing Gay Workforce," *Business*, July 23]. Please reserve the line count in your publication for issues that are actually important to the IT world and aren't too appropriate to a political soapbox.

Roger D. McClary
Waco, Texas

WHAT difference does it make what someone does in the privacy of their off-duty hours? I submit that there is no place in the work environment for a discussion of a co-worker's sexual orientation. It is irrelevant in determining ability to perform. This sort of discussion

doesn't contribute to employee morale but is disruptive in the work environment. I view discussions of this sort as unwarranted, unrequested and harassment.

Alan Tanner
San Diego

THANK YOU for publishing such an important article, not only to the IT industry but to the business community in general. I couldn't agree more that the freedom and confidence that comes from sexual acceptance at work is invaluable. My experience has shown that the most productive workplaces are the ones where every person is valued and supported for his contribution. Being free enough to work as an open and honest gay employee only contributes to the productivity of the workplace (plus, I think most people find it is a heck of a lot of fun). Openly gay employees bring a unique perspective, and that contribution enhances the overall

workplace experience tremendously. Workplace atmosphere is something that many IT employers are feverishly trying to improve in an effort to retain top talent. Listen up, exec staff!

David Smyth
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YOUR ARTICLE really missed the mark. I've worked in a corporate and entrepreneurial setting for over 25 years and have learned that sexual preference in and of itself has no place in the workplace. The writer stated, "Imagine if your job were to depend on keeping your heterosexuality a secret." Actually, it does in many of the world's top companies. Displayed inappropriately, it's called sexual harassment. We need to face the fact that homosexuality affects a very small portion of the population. Whether it's wrong or right is not my issue. Homosexuals have

chosen a lifestyle that has consequences, and all adults must accept the consequences of their actions and beliefs. Homosexual behavior makes heterosexuals, the majority, feel uncomfortable, and no amount of money and corporate agendas are going to change that. How about we just focus on the job that our company is paying us to do? The team as a whole is more important than the individual members and their preferences.

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MOREONLINE

For more letters on this and other topics, visit our Web site.
www.computerworld.com/letters

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JOHN GANTZ

The Rising Tide of Voice Technology

WHILE JOGGING recently, I almost got run over by a soccer mom in an SUV talking on her cell phone. (Honest!)

This was a learning experience on cell phone safety, which I would like to apply to personal digital assistants (PDA) and one particular type of challenge they will place on IT organizations.



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Here's my train of thought:

1. The competition between PDAs and wireless phones is driving PDA manufacturers to add voice-calling services to their products.
2. For safety reasons (get the connection?), more cell phones will have to include voice activation.
3. This means that some PDAs will require voice activation as well, causing a ripple effect.

While companies like Sensory Inc., Winbond Electronics and Conversational Computing are putting voice recognition on chips or in software packages small enough to fit on PDAs, major vendors are backing the new VoiceXML standard that will enable "voice" Web pages. Also, PDA operating system vendors Palm and Microsoft are building voice capabilities into platforms, and companies are experimenting with voice Web portals.

You'll soon have to develop an IT strategy to deal with voice-activated PDAs, voice response and voice portals. Your employees — and perhaps your customers — will talk into their PDAs and expect something to happen. It will be your job to make it happen.

Any growth in voice-activated devices that access the Internet will have to be accompanied by more robust voice recognition and processing inside the enterprise. Once customers start talking to their Palm Pilots, Pocket PC devices and Nokia phones, they're going to want to talk to their sales automation applications, order-tracking systems and e-mail boxes. The No. 1 corporate use for PDAs is employee communication to enterprise applications, particularly e-mail. Why not add voice mail to that?

I've already told you [News Opinion, May 21] about some of the things you'll face just dealing with lots of little devices that access your intranets, e-mail systems and Web sites. Now, let's talk about voice.

This wireless build-out is expected to drive \$40 billion in IT services to wireless applications — an increase from less than \$1.5 billion last year. Some percentage of that will have to be devoted to voice. Since voice recognition is one of those things that most enterprises haven't done, you'll most likely need outside help to implement even a rudimentary application.

You'll also have to spend money on the software to manage these remote devices, the consultants to help you pick software packages and VoiceXML training for your technical people. You'll also have interesting challenges once you actually build a few voice applications, because not everyone in the organization will want to talk to a machine as part of their daily work. How many of us ever used dictation machines?

There are some great applications on the horizon, from customer support and sales automation to inventory management and unified messaging. But there will be a lot of "noise" in the market as well. As long as that noise doesn't create any casualties on our roads. ▀

BRANDON MUSLER

Washington Is Unprepared to Fight Cybercrime

AFEDERAL INVESTIGATION that caught "Mathias Thurman" in its web [Security Manager's Journal, June 18] begged the question: How much encouragement do government agencies deserve in combating cybercrime?

Computer cracking, once a tribal status-marker, has gone mainstream. It's so rampant that the unofficial scorekeepers of the hacker wars at Attrition.org have stopped mirroring Web site defacements. They burned out. On some days in May, three times as many Web sites were tagged as in all of 1995 and 1996 combined. Like tattooing or body piercing, hacking is becoming pedestrian.

The media and Washington have been following this trend. The FBI, which enforced Prohibition and prosecutes the war on drugs, wants in. Addressing "cyberterrorism" offers a way to capture headlines, influence legislatures and secure more money. That's a godsend for any federal agency, especially the beleaguered FBI.

The June issue of *CIO* magazine contains a



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wrong-headed article suggesting that corporate America invite the FBI to investigate all cybercrimes. That's akin to writing a blank check to an investigative agency and praying that it develops technology expertise. The General Accounting Office recently criticized the efficiency of the FBI's National Infrastructure Protection Center. Its director, Ronald Dick, didn't deny it. Instead, he cried out for more resources, meaning, of course, a bigger budget.

Compare the hacking epidemic to the war on drugs. For decades, Washington has commissioned task forces, executive studies and special agencies, without stemming the tide. This centralized approach failed despite international borders, a multitude of police forces and endless prevention programs. Most narcotics are grown in known areas; there are relatively few suppliers at the source. Substance abuse is a finite problem compared with hacking because illicit drugs can't be electronically replicated.

The hacker wars are taking place in our living rooms and offices. Hacker traffic flows unimpeded until it arrives at your electronic doorstep. It's not checked for contraband at geographical boundaries. Law enforcement agencies can't compensate for inadequate laws. Kids learn to hack in school because understanding computer networking is a valuable skill.

Thus, there are more potential computer crackers than crackheads, the difference being that every high school hacker is simultaneously a supplier and consumer of the electronic "illegal substance." They can get as much as they want, for free, forever.

Yes, we must keep international hackers-for-hire out of defense, power and air traffic control infrastructures. But we don't understand the prosaic "packet kiddies" problem yet, let alone have solutions. It makes little sense to involve the FBI every time an electronic graffiti artist hits a local business. Heaping money on federal agencies will not generate results until we address root causes.

Washington should prioritize funds for successful nongovernment organizations such as the SANS Institute and CERT Coordination Center before artificially donning the mantle of leadership. CERT has extended a response model originally evolved by antivirus vendors to the larger Internet community. This proved invaluable during the Melissa virus rampage, when the center coordinated the efforts of commercial and not-for-profit organizations.

If we really want to, we can still buy illegal drugs. It's a lot harder for surveillance aircraft to spot a bad packet header than it is to identify a drug-carrying Cessna crossing a border without a flight plan. If you're confused, don't feel bad, because your congressman may not have a clue either. Tell him that until he can explain it to you, he should "just say no" to tackling the hacker menace with your tax dollars. ▀

BUSINESS

SCORING BIG WITH CUSTOMERS

Professional sports teams and arenas miss out on billions of dollars each year in lost concession sales and parking when season tickets go unused. So organizations like the Arizona Diamondbacks have started putting management software in the hands of season ticket holders so they can better track ticket usage. **► 28**

R&D VISIONARIES

Although some vendor research-and-development activities are years away from becoming commercialized products, insightful IT managers are charting a course for their organizations by keeping their eyes on evolving technologies. **► 32**

BREAKING NEW GROUND

Innovation is critical at TRW, which prides itself on its cutting-edge discoveries and patents. So as manager for software applications and database services at the company's Space & Electronics Group, Linda Chan is under pressure to ensure that employees have state-of-the-art tools that can help them go where no one has gone before. **► 36**

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KANSAS CITY SOUTHERN'S leaders are putting a major management control system project on track. From left to right: John Leek, assistant vice president of technical services; Scott Arvidson, CIO; and Richard Stones, project manager.

GAINING GROUND ON RAILROAD GIANTS

KANSAS CITY SOUTHERN IS ABOUT TO LAUNCH a \$50 million management control system that should help the railroad cut freight-train cycle times, reduce expenses and bring its customers closer to the brass ring of guaranteed, on-time delivery.

30

Watching the Bottom Line From Box Seats

Sports teams are using software to help season ticket holders allocate their seats

BY LINDA ROSENCRANCE

CALL IT a new twist on customer relationship management: A company buys a product it knows its customers need and then gives it to them as a complimentary perk.

Sound far-fetched?

Several professional sports teams and venues don't think so, including the Arizona Diamondbacks and the operators of America West Arena in Phoenix and the Georgia Dome in Atlanta.

For sports teams and stadium operators, revenue from food and other highly profitable concessions increases as the number of people attending games and other events increases.

Sports teams also know that season tickets and luxury boxes are big investments for corporations — investments they might not continue to make if they think they're wasting their money. So it's in everyone's best interest to ensure that top-flight customers always use their tickets.

"Millions of tickets and suite seats go unsold or unused each year, which equates to billions of dollars in lost potential revenues" from unsold food and beverages, sponsorships, tickets, merchandise and parking, said Robert McAuliff, chairman and CEO of Season Ticket Solutions Inc., a Chicago-based developer of ticket management products.

"Season ticket holders ... miss 25% to 50% of games every year," he adds, pointing out that 80% of season tickets are corporate-owned.

That's why clubs like the Diamondbacks are paying \$25,000 to \$30,000 per year for

the privilege of keeping their top ticket holders happy by providing them with free ticket management software, according to McAuliff.

Value-Added Service

Season Ticket Solutions' products, UsherPro 2001 ticket management software and UsherPro2001 Web, a Web-based version, allow ticket holders to manage, track and allocate blocks of seats. They also allow suite owners to monitor the status of all of their tickets: whether they're being used, who's using them for each event and who has used them in the past.

"Successful management of luxury suites is a very high pri-

ority for the Diamondbacks," said Diney Mahoney, director of suite services for the team, whose season ticket holders use UsherPro 2001 to track their tickets.

The Diamondbacks, who play at Bank One Ballpark in Phoenix, are engaged in a joint venture with the Phoenix Suns basketball team and the operators of the Suns' America West Arena. Eighty percent of the owners of suites at the arena and the ballpark are customers of both teams.

"[Ticket holders] make a big investment in their [luxury suites]. They pay \$98,000 to \$120,000 a year for the 12-seat suites, and they sign contracts for seven to 10 years. It's a serious commitment," said Charlene Sprehe, Mahoney's counterpart at America West Arena. "If tickets aren't being used, they're being wasted,

and customers think it's not a good return on their investment."

And if they aren't getting a good return on their investment, suite holders might not renew their ticket sponsorships, which means a loss of revenue for America West Arena, Sprehe said.

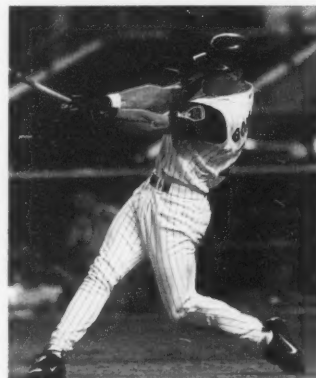
Mike Hubay, general manager at Passey-Bond Co., an insurance company in Mesa, Ariz., said his firm has had a luxury suite at America West Arena for more than four years.

Hubay said that before he began using UsherPro, he used a Word document he created to manually track who was using tickets for each game, which was time-consuming. With UsherPro, all of the data is preloaded, and all Hubay has to do is organize it, he said.

Peggy Roberts,

senior executive coordinator at the Georgia Dome, said Season Ticket Solutions is developing a customized Web-based ticket management system for the sports venue's suite, club and season ticket holders.

According to Roberts, clients will be able to use the system to manage their tickets by the beginning of the football season in September. ▀



LUIS GONZALEZ of the Diamondbacks, who aim to maximize revenue from season ticket holders.

Minister-Turned-CEO Preaches Balance

Phillips seeks equilibrium between work, life

After stints as director of worldwide e-business sales at Tivoli Systems Inc. in Austin, Texas, and as regional manager

to the technology sector. He's now CEO of Tonic Software Inc., a Dallas-based company he co-founded in late 1999 that

develops Web application management software for large corporations.

Computerworld's James Cope spoke with Phillips about how his experience in the pulpit affects the way he runs his company.



PHILLIPS SAYS ministers and CEOs play similar roles.

at Dallas Theological Seminary and Denver Seminary. He went on to serve as pastor of the Church of the Pines in Boulder, Colo., and as chaplain at Summit Ministries in Manitou Springs, Colo.

But Phillips, 42, has returned

to leave the ministry and return to the IT field?

A: A lot of pastoral work is not just about getting there on Sunday. There's also a lot of

ministering to people. There's divorce, death and other issues you have to deal with. I never saw my own family. Ultimately, I decided that I could have just as much impact on people's lives by going back into business.

Q: How does being the CEO of a start-up compare with the experience of being a minister?

A: They're really very similar. As a CEO, especially of a start-up [such as Tonic], you're the chief evangelist of the company's mission. So I regularly communicate that to the outside world and work with employees to instill passion for what we're doing.

Also, in churches, I've reported to a board of elders. At Tonic, I've set up an advisory board of people around the country. And whether you're a

minister or a CEO, you need to be an excellent communicator, be consistent and have a sense of integrity.

Q: What's your greatest personal challenge?

A: To maintain a balanced life for myself and ask employees to do the same. It's something that's difficult. I try to factor in nonwork things. I tell employees, "Get out of here, go home, and spend time with your families." Sure, maybe they have to work an hour or two from home, but that means they don't have to come in on the weekends.

People need activities other than work. It doesn't have to be religion. It can be pets, sports, family.

I really try to foster a non-judgmental culture. I like the principles outlined in the book *The Corporate Mystic* [Bantam Books, 1997]. The authors talk about getting more by doing less. ▀

WORKSTYLES

IT Pushes Pace at Pharmacy Firm

Interviewee: Joe Lacko, vice president of management information systems

Company: Duane Reade Inc., a pharmacy chain

Main location: New York

Number of IT employees:

28, plus a few contractors.

Number of employees: 5,500

Mission-critical systems:

"The pharmacy system, which fills all of our prescriptions for customers, and a radio-frequency handheld application for in-store inventory management that works with our computer-assisted ordering system. It helps us update prices and track the receipt of merchandise and the transfer of product between locations."

Major initiatives:

"A data warehouse, which we're installing now to house customer data from our loyalty card program, plus sales and merchandise information; radio frequency handheld units at our distribution facility to [automate] receiving, put-away, selection and shipping of merchandise to the stores that will eliminate a current paper-intensive system; and an open Internet-based [electronic data interchange (EDI)] system from eB2B Commerce that will handle both Internet-based EDI, as well as any proprietary systems that our suppliers may have in place."

How do you manage all these projects with so few people? "The EDI system is being outsourced, and we're doing the [distribution facility] and data warehouse systems in-house, with some minor help from the vendors on initial set-up. We have six systems development people on those two projects; 13 store services people, of whom seven are dedicated to point-of-sale installation and maintenance and pharmacy system support; and seven people in operations, plus a director of special projects and myself."

"It is a relatively small group for a \$1 billion corporation, so it's very important that everything is planned carefully, because we're on a fast track. I arrived here five years ago in October, and we had 60 stores and sales of \$325 million. Today, we've tripled the stores [186 total] and more than tripled the business."

Are you trying to hire more people? "We're on the brink of expanding IT, by maybe 10% to 20%."

What impact has the downturn in the market had on recruiting? "I now get more résumés than I ever did."

IT training: "It depends on the individual. There are no standard goals of x weeks per person; it's on an as-needed basis."

Employee reviews: Annual performance and salary reviews, "but salary

changes can take place anytime, depending on promotions or market changes."

Compensation and bonuses: "Because we're so lean and mean, I like to pay a little better than the going rate, so [staffers aren't] attracted to the outside world. Our turnover rate is very low, about 5%."

The one thing everyone complains about: "They used to complain about the air conditioning, but we just put in a brand-new system. Also, because of the fast track that we're on and the small organization, it becomes very hectic and sometimes there are just too many things on your plate at once. But it's better to be in a growth environment than a stagnant one."

Little perks: "Once every six months, we have a cleanup day, where we bring in pizza and get rid of all the junk, and people always feel good about that."

Would employees feel comfortable e-mailing the CEO? Yes.

— Leslie Jaye Goff
(lgoff@icnet.com)



What It's Like
To Work at...

BUSINESSOPINION

PAUL A. STRASSMANN

Uncertain Sentries

NINE YEARS AGO, the U.S. received its first official warning that an adversary may precede hostile military actions by launching a Pearl Harbor-like attack on the nation's information infrastructure. It took six years (and several advisory committees — I sat on three) for a presidential directive to create the National Infrastructure Protection Center (NIPC) within the FBI.

The NIPC was chartered as the national center for gathering information on threats, evaluating cyberattack risks, facilitating government responses to computer-based incidents, coordinating corporate countermeasures and monitoring recovery after an infrastructure attack.

Three years have passed. There is now overwhelming evidence that our enemies are counting on information warfare as the most expedient way to inflict damage on the U.S. Our military command and control systems, power generation, telecommunications, transportation and energy supplies continue to be vulnerable to information-induced failures.

So, how well is the NIPC guarding the national infrastructure? How good is the assumption that your firm's computer systems will be guarded against major disruptions? How well can you count on your federal sentries to allow you to relax?

The FBI, following its traditions, has treated information warfare as a form of criminal activity in which a perpetrator must be caught, indicted, then brought to trial. Most of its activity to date has been tactical, chasing individual incidents, such as complaints about denial-of-service attacks.

The NIPC isn't yet capable of analyzing warning signs, assessing vulnerabilities and issuing advance warnings of pending attacks. It hasn't established information-sharing links with most government agencies and the private sector, as it was chartered to do. The NIPC's roles and responsibilities haven't been adequately defined and are still subject to bureaucratic disputes that have resulted in poor cooperation.

For instance, the Federal CIO Council directs government agencies to report security incidents to the General Services Administration, not the NIPC. The Secret Service isn't cooperating with the NIPC. The NIPC doesn't have access to essential industry data such as the identi-

cation of critical systems components, known systems vulnerabilities and the mapping of respective interdependencies.

Though the president established 2003 as the goal for putting all protective missions in operation, the NIPC doesn't have a schedule of priorities, milestones and program performance measures. Why? Largely because it's unclear who's directing its mission. Is it the National Security Council, the Treasury Department, the FBI director or the Department of Criminal Investigation at the Justice Department?

Though the FBI's 1998 strategic plan identified the protection of the national information infrastructure as one of its highest priorities, ensuing actions haven't reflected that. The NIPC is tucked away within the FBI's counterterrorism division, reporting to the assistant director of one of 11 divisions. So seasoned Washington bureaucrats don't recognize this as an indication of high priority.

Staffing at the NIPC is woefully inadequate, with fewer than 100 employees, many of them on temporary assignment. The position of chief of the Analysis and Warning Section (the key operating position) has been vacant for half of the organization's existence, while only 13 of the 24 budgeted analyst positions are filled. And repeated requests for more staff have been rejected. When the General Accounting Office interviewed the NIPC's analysts, most of them revealed negative attitudes about their work experiences.

When — not if — your lights go out and not even your uninterruptible power supply will revive your blue screens, don't always blame your power company or software supplier. You may have become a "collateral victim" (that's Pentagonspeak) of an information warfare attack. In such a case, you may have to revert to primitive ways of handling information. The best you can do is add "information warfare" to your list of contingencies for which to plan. ■



PAUL STRASSMANN
(paul@strassmann.com) has been teaching a course on information warfare at the National Defense University in Washington since 1994.

Kansas City Southern is preparing to launch a \$50 million management control system aimed at helping the railway gain ground on its massive competitors by guaranteeing on-time shipments and cutting freight cycle times. By Matt Hamblen

KANSAS CITY SOUTHERN (KCS) rolls freight north and south through America's heartland, carrying automotive and computer parts from Canada, Chicago and other points into Mexico City and bringing finished Volkswagen Beetles and PCs back north.

But despite being dubbed the promising "NAFTA Railroad" after the 1994 North American Free Trade Agreement was ratified, analysts and company insiders agree that KCS and its holding company, Kansas City, Mo.-based Kansas City Southern Industries Inc. (KCSI), need dramatic IT innovations in order to compete with the four national freight railway giants: Union Pacific Corp. in Omaha; Burlington Northern Santa Fe Corp. in Fort Worth, Texas; CSX Corp. in Richmond, Va.; and Norfolk Southern Corp. in Norfolk, Va.

KCS is one-tenth the size of its next-largest competitor and has "been behind the ball on IT," says Douglas Rockel, an analyst at banking group ABN Amro Holding NV in New York.

In response to those challenges, KCS

is planning to introduce a \$50 million management control system (MCS) this fall that's intended to do the following:

- Help customers such as Dell Computer Corp. and General Motors Corp. order and track freight shipments online.
- Replace paper records used by train engineers and customer service agents.
- Provide business managers with a more effective way to measure costs such as those of leased freight cars.

The project, which KCS has been piloting on its Gateway Western rail segment between Kansas City and East St. Louis, Ill., for more than a year, is expected to cut cycle times for shipments by 10% and reduce expenses, company officials say.

Ultimately, the investment could pay for itself within five years, with a 22% additional return on investment over 10 years, company officials say.

The ultimate goal of the project is an elusive brass ring in the rail industry: on-time, guaranteed delivery of goods, says CIO Scott Arvidson.

Transportation analysts say it's com-

mendable for KCS to strive for on-time deliveries, because the rail industry is so far from reaching that goal. "All the railways are poor at scheduling on-time deliveries, and it hasn't even become a realistic metric yet," says analyst John Fontanella at Boston-based AMR Research Inc.

"Our legacy systems are just not providing business management personnel with the ability to get good information and make solid decisions," says KCS project manager Richard Stones. "Our current systems do not support a scheduled operation at all."

"Our company's ability for technology to actively support the business was crippled, and we think we've overcome that" with the development of the MCS, says Arvidson.

An Uphill Climb

Analysts say KCS needs to accelerate its IT activities to become the little engine that could, especially since the company has generally lagged behind the IT innovations of the rail industry's Big Four, which combined generate up to 20 times KCS's revenue.

"They face mammoth competitors. But there's not one railroad that has the opportunity to grow faster than this one," says Rockel. That's mainly because KCSI President, CEO and Chairman Michael Haverly helped engineer a major investment in Transportacion Ferroviaria Mexicana with 2,600 miles of rail in northern Mexico, which gives KCS an inside track to exploit NAFTA.

The MCS project has faced some obstacles thus far, including the recent economic downturn, which has cut into rail traffic and led the company to lay off 170 of its 3,000-member workforce in March, including several workers who were testing the MCS. Haverly

The Little Engine that MIGHT

also announced in April that the project was put "on hold," but Arvidson says it will start to be rolled out in phases to various regions next month.

The project began in earnest almost three years ago, but a need to conserve resources in the midst of Y2k computer fixes led to a parting of the ways with the original project partner, IBM, KCS officials say.

After that, software development became a round-the-clock operation, conducted in tandem with developers from Infosys Technologies Ltd. in Madras, India. KCS officials say it has gone smoothly. All told, some 1.5 million worker hours have been logged on the project.

Another concern was how and whether the multiyear development cycle would impact software updates.

For example, KCS relied on IBM's MQSeries Workflow middleware, which was "new and unproven" when the project began in 1997, Stones says.

"My concern was that the product would radically evolve or the vendor would drop it altogether," he says. "But MQSeries Workflow has matured into a stable and reliable product."

Getting Users on Board

The pilot that began on the Gateway Western segment in February last year demonstrated a need for more end-user computer training. "It was quite a culture shock for employees," Stones says. "The [graphical user] interface and computer mouse were foreign to a large number of workers." More hours of training were quickly added.

Garry Hopkins, one of the end users who piloted the system more than a year ago, is now manager of user acceptance and testing at the company. He has trained many of the 125 Gateway Western users on the new system — mostly locomotive engineers — as well as some of the 105 KCS customer service agents based in Shreveport, La.

"User acceptance has greatly improved over time, but at various times, we've had all the typical reactions of new users: scratched heads, anger, some very negative and others very positive," he says.

For months, Hopkins has been testing and finding glitches with the system, predominantly minor problems that require a developer to change or write new code. A major focus of the pilot

has been on an order entry system that allows customers or KCS agents to fill out waybills online describing cargo and shipping instructions.

A related function in the pilot allows train engineers to record on desktop PCs (and eventually on laptops) which freight or hopper cars were switched into a new train, Hopkins says. In the past, engineers would write that information on paper and phone or fax it to the customer service center. Agents then had the added step of typing the information into the legacy system.

Another new feature: KCS agents in the pilot can set up a customized report for a specific customer shipping grain or coal that will automatically report the status of the shipment to the customer. Previously, customer service agents would have to check a shipment's status and fax a report to a customer on request.

"As a former agent based in Shreveport, when a customer would call wanting to know when a shipment would arrive, we pretty much guessed based on our experience from past shipments," says Hopkins.

Going forward, KCS customer agents will have real-time information on track congestion or where a bridge might be out, thanks to new sensing devices along the tracks that were added in anticipation of the MCS. The automatic equipment identification system tracks every car, much as an inventory control device detects a garment being shoplifted, and could someday be supplemented by locomotive tracking using Global Positioning System technology.

Unlike in the trucking industry, where a cross-country shipment might be made by a single trucking company, trains work in a complex fashion, requiring cooperation between carriers using sophisticated tracking methods, analysts say. A cross-country train might have to travel on tracks operated by six or seven carriers, and when a train arrives at a city, individual cars have to be sorted into other trains.

"Shippers haven't historically wanted to send by rail because it may not get there at all or it might take maybe three or four days more than expected, and maybe the carriers will break the merchandise and not tell me which carrier broke it," says ABN Amro's Rockel. "These technologies are more proactive and give me as a customer an inducement to use rail. I like what KCS is doing, and someday they may be able to guarantee service."

They think they can, they think they can. . . .



LEADERS ON KCS's MCS project (left to right): John Leek, assistant vice president of technical services; Scott Arvidson, CIO; and Richard Stones, project manager.

Charting an R&D Course

By keeping an eye on vendor research-and-development activities, IT organizations can prepare for key architecture choices and purchasing decisions.
By Ted Smalley Bowen

TRACKING THE RESEARCH-AND-development activities of technology vendors might seem a better focus for science documentary filmmakers than for IT managers. But in the real world, today's technical breakthrough could influence next year's IT decision-making.

By keeping an eye on R&D activities, IT organizations can prepare themselves for important architecture and purchasing decisions. If they know which technologies are feeding the product pipeline, IT managers can more reliably plan their systems and personnel strategies and be better positioned to select the best technologies to meet their companies' business requirements.

That's been true for Jeffrey Pound. "Strategically, I think that storage is going to get cheaper and consolidated into larger pools," says Pound, chief technology officer at the Air Force Research Laboratory at Wright-Patterson Air Force Base in Dayton, Ohio.

"So I'm going to start shifting resources from storing to securing, because as I aggregate data, it becomes more valuable," he adds. "And I've got to significantly step up my [information assurance] activities to make sure I'm not spinning a disk with malicious code or funky data on it."

Rather than building a slavish dependence on the latest technology products, IT managers should instead

track R&D activities to gain the perspective needed to plan ahead, says Donn Dinunno, an analyst at Stamford, Conn.-based Meta Group Inc.

"Putting in new technology too quickly is disruptive," says Dinunno. "You're actually making the hardware obsolete faster" by making changes before all of the benefits of the technology have been leveraged, he adds.

The trick, says Dinunno, is to anchor R&D planning around strategic business concerns, rather than investigating technology for its own sake. The question IT managers should be asking

is, Where do customers want us to go, and what's doable there? he says.

Organizations would be well served to follow the example of some larger companies that rely upon a handful of IT staffers to track emerging technologies considered to be five years from market, assign a dozen or so people to focus on the three-year strategic planning window and have others looking at technologies that are ripe for adoption within the one-year budget cycle, according to Dinunno.

Where to Go

In addition to surfing the Web, participating in chat groups and becoming involved in user associations, IT managers often turn to consultants and market research firms for clues about future technology developments. Vendor R&D bulletins and white papers occasionally provide useful information, but they sometimes resemble marketing babble.

But even the best scouting is useless unless the information is shared effectively within the company.

"Many of the hierarchical organizations that are larger don't do a good job of communicating down," says Dinunno. "In start-ups and fairly small, cohesive units, people coordinate and communicate much better."

In addition, increasing efficiency in routine operations can free people to research next-wave technologies.

"Try to automate and delegate everything to the lowest level possible. It gives you the bandwidth to really focus and be strategic and look at those emerging technologies," says Rod Massey, CIO for the city of Palo Alto, Calif. That hard-won time should be

spent delving into the most widely applicable technology, he advises.

"Focus on the emerging technologies that are going to give you the most bang for the buck across all the lines of business, or your areas of [IT] operation — something like wireless vs. a niche technology," says Massey.

IT departments need to draw up lists of the technologies likely to affect their businesses.

Dan Black, director of e-commerce at United NetWorks, a subsidiary of UAL Corp. in Chicago, says his group spends a lot of time evaluating wireless technologies and studying future directions of managed service providers.

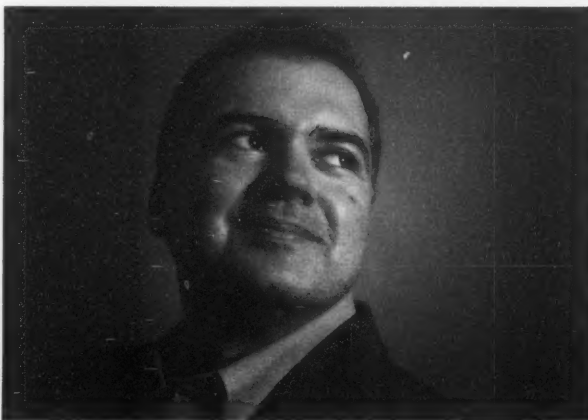
Explaining the organization's interest in managed service providers, Black says, "It's not a technology, necessarily, but there's a shift in how you do infrastructure services, and we're trying to feel our way through where that's going."

Still, some managers are reluctant to dwell on prospects beyond the three-to-five-year range. "You can't put a lot of weight into that, other than giving you some general technical directions, because the market has no guarantee to be there," says Black.

But taking the long view can counteract the dizzying effects of day-to-day IT operations and the steady drumbeat of product releases.

"Do a little R&D every day, for sanity purposes if not for strategic purposes, to make sure that you are keeping things in balance," suggests Dinunno. ▀

Bowen is a freelance writer in Boston. Contact him at ted_bowen@hotmail.com.



“

You can't put a lot of weight [on long-range planning], other than giving you some general technical directions.

DAN BLACK (LEFT), UNITED NETWORKS

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Men hold the majority of IT foreign assignments, but women have the soft skills for global success, says Prudential's Irene Dec. By Kathleen Melymuka

AT A BUSINESS LUNCH in Korea, Irene Dec's hosts were watching, waiting for her to begin eating first, as politeness requires. The lunch was in plastic *bento* boxes, with numerous individual compartments holding different kinds of food.

Dec, who doesn't count Asian food among the highlights of her overseas experiences, looked for something familiar. Spotting what appeared to be a pile of large shrimp tempura, she quickly picked one up and popped it into her mouth so the others could begin their meal.

After she swallowed, Dec recalls, one of her Korean companions pointed to the remaining shrimp in the *bento* box and quietly told her, "We usually cut that off," indicating what turned out to be the shrimps' intact heads. "I had eaten the eyes, the brains — everything," she says.

Dec would say that munching shrimp eyeballs was a small price to pay for building relationships over lunch in the Asian business world, where everything is about relationships.

Dec has gained lots of experience in that world in the 18 months since she became vice president for international investments at Prudential Financial and began to travel far from her base in Newark, N.J.

Her responsibility for global program and technology management has taken her to Korea and Japan as well as Central America, the U.K. and Scandinavia, where she has gained many insights into what it takes for IT women to succeed in the global environment.



RENO JAMES

Global Wor

Global business experience is becoming a prerequisite for advancement to top-level management at many U.S. businesses. IBM ranks it among the top five essentials for successful executives, and General Electric Co. Chairman Jack Welch has said, "The Jack Welch of the future cannot look like me; I spent my entire career in the United States."

Global experience teaches people to see business challenges from different perspectives, value alternative approaches to problems, gain insight into others and appreciate the strength that diversity brings. It also increases flexibility, breakthrough thinking and self-awareness, and helps prevent interpersonal blunders and tunnel vision, according to Catalyst, a nonprofit, New York-based research organization working to advance women in business.

However, women are frequently denied the opportunity to work abroad because their managers fear they won't be accepted in foreign business cultures. But although this may happen in a handful of places, a recent Catalyst survey of people who served in Asia and the Pacific Rim, Europe and Central and South America found that most women who were assigned overseas reported that their gender wasn't an issue or that it actually helped them in doing business.

Only 17% of those surveyed said they found it difficult to build business relationships in their host countries, compared with 10% of men. Moreover, 91% of women (and 92% of men) said they would accept their assignments again.

Dec, who earned a national reputation as head

“

You need people who can collaborate, build relationships, understand behavior, and women tend to be more in that play.

IRENE DEC, VICE PRESIDENT FOR INTERNATIONAL INVESTMENTS, PRUDENTIAL FINANCIAL

of Prudential's Y2k project, says she was thrilled to get an opportunity to work in the global environment. As a single woman, she didn't have to deal with the family obligations that make travel-intensive jobs difficult for many people. She knew that Asian culture would be different and acknowledges that she felt a little anxiety when she learned that less than 5% of Japanese technologists are women.

Dec prepared for her first trip to Asia by collecting insights from books, magazines and other business travelers.

Once there, she was relieved to find that Asians assume that American women are competent and wouldn't have been sent abroad otherwise.

"They watched me," Dec says. "In a way, I was being tested, but you're tested anywhere you go. As soon as they saw I had the knowledge, they immediately respected that. If you have the knowledge, doors are open to you."

That insight supports the findings of studies by Catalyst and other researchers, in which global businesswomen reported that they are seen as American first and female second and are therefore usually unaffected by cultural biases against women.

"I wouldn't want to be a German woman working in a German bank," said one survey respondent. "But as an American woman doing business in Germany, it is different. I am coming with an expertise, and they respect that."

Once competence is confirmed, the other key to doing business in Asia is respect, Dec says.

In Asia, business introductions and meetings are very formal. There's a courtesy with business cards called *meishi*: Two people stand straight, hold their card with both hands and look each other in the eyes. He bows, you bow and you hand him your business card. He reads it and then hands you his card, and you do the same. You don't just shove the card in your pocket. When you sit down for the meeting, you put the card in front of you. That individual has given you a part of him, and you must show it respect.

In order to build relationships slowly and carefully in the Japanese manner, Dec took a less assertive posture than she would in the U.S. Her manner was reserved and respectful; she spent most of her time listening and spoke only when she was sure she could add value to the discussion.

"There would be a roomful of men and myself," Dec says. "If it was not an English-speaking group, they always had a translator. Business meetings in Asia are never confrontational, and there's a lot of quiet time. About 25% of the time, people are thinking about what was just said. At first it was awkward — Why isn't anyone talking? But now I think it would

Succeeding In Global IT

Irene Dec's personal experience and the Catalyst organization's survey of global business women have yielded the following tips:

To get the global job:

- Work for a global company and apply from within.
- Keep up on global business issues.
- Hone your skills so you have great value to offer.
- State your interest in overseas work. Many supervisors won't ask a woman unless she volunteers.
- Evaluate the best time for a global assignment for you personally and for your career. Women in the Catalyst study tended to be in their early 40s.

When you get the job:

- Learn all you can in advance about local and business cultures.
- Dress conservatively.
- Respect local mores.
- Be patient.
- Take your behavioral cues from those around you.
- When invited to socialize, go.

be a good idea for us sometimes."

Dec took her lead from the nonconfrontational tone of Japanese business meetings and was careful to never cause any of her associates to lose face.

"I didn't want to position anyone in an awkward way by making him feel I was challenging him, so where I had concerns with what was said, I dealt with each person [later], on an individual basis," she explains.

Dec found that Asians love to share their culture, particularly by sharing meals. Since they often worked until 9 or 10 p.m., there were plenty of opportunities to build relationships over lunch and dinner.

"As we walked into a restaurant, we took our shoes off and put on slippers. I just followed along," Dec says. "I noticed short tables with pillows to sit on. I had a short dress on, but I managed to sit sideways and enjoyed my first restaurant experience. Next time, I wore something longer."

Dec has occasionally had to apply some pressure to make deadlines in Japan, but she has found that building good relationships has made that nearly painless.

"I had to get a little assertive and make things happen. But I had developed respect because I listened to them," she explains. "I didn't just say, 'We're doing it this way.' I said, 'This is an issue; what do you think?' I put confidence in them, and they appreciated that."

Outside the workplace, Dec found that getting around was complicated. Not only are there no signs in English; Japanese Kanji also has thousands of characters, so you can't use a dictionary. She asked someone at her hotel to write her destinations on a piece of paper and carried that with her for cab drivers.

"There are very few outside people in Tokyo, but people were very accepting of me as an American and as a woman," Dec says. "Sometimes I traveled alone. People would acknowledge me and nod. If I ever had a question, I'd find young people [who often spoke English], and they were so receptive. They would even walk me to where I needed to go."

Dec says she feels that IT women make great candidates for global positions, especially in Asia. "You don't want to send the people on a power play to an Asian business, because that style is not going to work," she explains. "You need people who can collaborate, build relationships, understand behavior, and women tend to be more in that play."

But along with soft skills, hard expertise is required. "I would encourage executives to offer those opportunities to sharp technologists," she says. "Don't send them out if they don't have value they can present. It comes down to the knowledge base."

And the willingness to munch an occasional shrimp brain. ▀

Sparking Innovation

In 1927, TRW Inc.'s sodium-cooled engine valve helped Charles Lindbergh complete the first solo trans-Atlantic flight. In 1969, it was TRW's fuel system that powered the Concorde, the first and only supersonic passenger aircraft. And since 1999, the company's Chandra X-ray telescope has been floating in outer space, capturing never-before-seen images of supernova remnants and black holes.

Needless to say, creativity and innovation are critical at the Cleveland-based firm. But the pressure to innovate doesn't rest solely with the scientists and researchers. In order for these professionals to lead the way in their fields, the technology they use must be state-of-the-art.

That puts the pressure on Linda Chan and her group. As manager for software applications and database services at TRW's Space & Electronics Group, Chan and her team are constantly searching for new ways of working better.

Sometimes, that means employees must embrace an idea, process or tool that's completely foreign and, sometimes, a bit scary. But by encouraging workers to keep an open mind and accept new systems and processes, Chan and her team make sure TRW's employees are equipped with top-of-the-line tools that help them constantly break ground while cutting costs and improving efficiency.

In a recent interview with Computerworld's Melissa Solomon, Chan shared some of her strategies for sparking creativity and innovation among IT workers.

How important is innovation in your work? What do you see as the goal of innovation? It's really key for our role in IT as software developers and systems integrators. First of all, TRW lives on ideas. And the nature of space and electronics is to be on the forefront of space science. . . . So with all this leading-edge technology, innovation and creativity are crucial to our business.

As the organization supporting the infrastructure, we need to be continually evolving and looking at ways to improve the business, ways to create value, using IT solutions to promote business growth, to enhance our overall competitive edge. Most important of all is how we can improve the bottom line.

What helps foster creativity and innovation among your staff? Our management encourages innovation. In recent years, TRW has introduced hundreds of patents in diverse fields, in space, lasers, elec-



WHO IS SHE?

Linda Chan is manager for software applications and database services at TRW's Space & Electronics Group in Redondo Beach, Calif. She has been at the company for 20 years. Fifty-seven people report to her.

tronics, and our employees are recognized for innovation. There are annual awards, chairman's innovation awards . . . distinguished patent awards. It's very common here. . . . Then there's just the pat on the back, supporting employees, following through to implement the solution with them, to remove roadblocks. . . . Also, in goal-setting, we look for "embraces change" and "innovation" upfront.

How do you encourage innovation and creativity on a day-to-day basis? I try to create a working environment that encourages input and ideas from everyone. One thing I do often is I enjoy walking the halls and talking to my staff. And I find a lot of ideas are communicated that way, just informal conversation, one-on-ones. I just ask for ideas in terms of process improvement and cost savings.

I also try to promote interchange of ideas. I hold cross-functional team discussions. It's important to create a constructive environment where we can feel free to challenge our current processes.

Can you give an example of an idea that really took the way people worked and turned it upside down? Back in 1994, we migrated 30 applications of mainframe and other platforms into a single system. This is the [enterprise resource planning] system from Just in Time Solutions [now Avolent Inc. in San Francisco], and we did it in eight months. And we realized significant annual cost savings. From 1994 to now, each year [we have saved] \$3 million . . . by eliminating mainframe costs, eliminating redundancy in data entry, [creating] a more integrated system.

Did you face any roadblocks? A lot of people thought that this can't be done. In fact, most of the people thought their systems worked fine . . . so we didn't need to change. But with the business evolving, we like to see more integration and less of those redundant applications. And this really made a big change. [In 1997, we] expanded the system for the Web . . . so people can start ordering parts online. We can look up parts online [and perform] electronic routing and approval.

So there is some resistance to new processes? Yes, to some extent. But most of the time, if people share a common goal, they are receptive. Sometimes, people are not comfortable going out of the comfort zone, so you get them involved early. You make them part of the team. So when you bring them together, even though they have divergent views, they have a shared goal, and then you get their buy-in.

Innovation can be scary. How do you promote new ideas while still keeping things safe? I do need to take a look at the risks and how we manage those risks. And everything we do, we need to align IT with the business and we have to develop a business case, explain why we are doing this, the cost and the benefit of doing this, the risk and how we can manage that risk.

We have a cross-functional team where we brainstorm ideas, share best practices. We meet once a month, sometimes more frequently, if there's an initiative that we're working on. . . . Bringing diverse organizations together and coming up with solutions and helping our company grow and do business more effectively, that really makes a difference. We also need to look at what other companies are doing. ■

Dear Career Adviser:

I'm a software developer in the Boston area with more than five years' experience in C++ and Windows. I work for an independent local exchange carrier (ILEC), a telecommunications company that provides local and long-distance services to medium-size businesses.

Since the telecommunications industry is in such bad shape right now, should I be worried about my job? Should I stay in telecommunications?

— C++ TELECOM

Dear Telecom:

You're appropriately concerned, since telecom companies have lost more than \$2 trillion worth of value for their investors and laid off thousands of workers.

Nonetheless, you still have some good alternatives, says Bruce Miller, executive vice president of technology and advanced development at Chelmsford, Mass.-based Astral Point Communications Inc., a company that provides metropolitan optical networking equipment.

First, with an ILEC background, you should be familiar with the infrastructure requirements of the primary customers of telecommunications equipment vendors.

The ILEC experience you have could qualify you for an application-engineering

role at an equipment vendor, where the valued skills include familiarity with synchronous optical network design, IP and soft switching.

In terms of pure software, in any market, up or down, there is a constant demand for software engineers who can write system diagnostics. This code involves critical lower-level skills and tests the integrity of telecommunications hardware during network commission and in the operational background.

Nonetheless, the brief background synopsis you provided with this letter seems to indicate someone who is more junior than a five-year veteran, which may make you less secure both in your current job and as a job seeker.

"C++ and Windows represent a technical tool kit but with just this information, your résumé would not be read," says Miller.

Were you coding graphical user interfaces or tools or working on billing infrastructure? What exactly did you design? Why would a hiring

manager want to bring you into his organization if there were just one opening?

Develop separate résumés for each type of opportunity you pursue and detail the equipment you have been involved with, the tools you have written for source control and the diagnostics and operating system environments you are used to.

In this tighter market, you need to show the technical community that you really have five solid years of applicable experience. Then you can move into an organization at the senior engineering level commensurate with your experience.

Dear Career Adviser:

I have three years' experience focusing on Sybase Inc.'s SQL Server and PowerBuilder and

six years' total experience in client/server.

My core expertise involves installing our telephone billing software serving international clients. Before the economic slowdown, I sought to move within the company to work with Java technologies and HTML.

Now I see many Java people but seemingly few openings. Should I continue with my client/server career in SQL Server and PowerBuilder or switch to database administration and learn other database technologies?

— POWERING ON

Dear Powering:

Moving to Web-based technology is definitely the right track, advises Sanjeev Malik, director of application development at KMV LLC, a San Francisco-based company that provides quantitative credit risk products for financial institutions worldwide.

Furthermore, Sybase software has been widely used on Wall Street and offers new technologies involving the Web, such as Enterprise Portal.

PowerBuilder and HTML offer far fewer opportunities for your future, but you're on the right track by continuing with your Java skills and combining these with database

expertise, counsels Malik.

These skills will let you move toward a database administrator or application database administrator role.

Training on other databases, such as IBM's DB2, can be of immense help in furthering your career. Overall, your experience with telephone billing systems as well as your business skills, your international client experience and your installation skills that involve data administration and Java technology all work in your favor.

Dear Career Adviser:

I have six years of experience in designing and developing commercial business application software, including four years working with customer relationship management (CRM) applications.

My company is moving. How should I write my résumé?

— NOT MOVING TO MIAMI

Dear Not Moving:

Create a section at the top of your résumé called "Expertise." Include your application software, middleware background and CRM experience there.

Since several of the companies you have been employed by are relatively unknown, describe each in a short sentence, emphasizing the company's mainstream partner relationships. This will help your potential employer understand your background. ■

BRIEFS

Yahoo Customers Get Expanded Resources

Northern Light Technology Inc. in Cambridge, Mass., announced that it will make its content and search services available to existing and future customers of Santa Clara, Calif.-based Yahoo Inc.'s Corporate Yahoo Enterprise Information Portal. Users

will gain access to Northern Light's online business library of more than 7,000 full-text sources, including trade journals, newspapers, academic journals and newswires.

ASP to Aid Retirees

Birmingham, Ala.-based SunGard Employee Benefit Systems, an operating group of Wayne, Pa.-based SunGard Data Systems Inc., has introduced MyPlanAdmin, a set of application services for third-party retirement plan administrators.

MyPlanAdmin includes plan setup; payroll entry; record-keeping; and participant assistance, such as investment advice, through its OmniNet browser-based front end.

Kodak to Use EMC For Photo Storage

Rochester, N.Y.-based Eastman Kodak Co. last week announced that it has entered into a global agreement with Hopkinton, Mass.-based EMC Corp. as its provider of online infor-

mation storage systems and software for the new Kodak DirectView PACS (picture archiving and communications system) line of products, which are scheduled to ship in October. PACS will let hospitals digitalize X-rays and CT scans for storage and distribution.

Cruise Line Taps CRM Vendor Protagona

Miami-based Royal Caribbean Cruises Ltd. is rolling out campaign

management and marketing applications from Chicago-based customer relationship management (CRM) software maker Protagona Worldwide Ltd.

When it's installed, Protagona's software will tap directly into Royal Caribbean's customer database to give marketing personnel a grasp on specific customers' preferred activities, such as rock climbing, so they can target their campaigns more efficiently. The cruise line must now build a marketing database with information about its 2.2 million guests.

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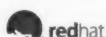
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TECHNOLOGY

XP POLICY RECONSIDERED

Computerworld takes a second look at Microsoft's controversial antipiracy activation procedure for its new Windows XP operating system. **40**

SECURITY JOURNAL

As battle-hardened IT professionals come aboard from failed dot-coms, they bring a refreshing practical focus on security issues to security manager Vince Tuesday's company. **42**

SLOW MIGRATION

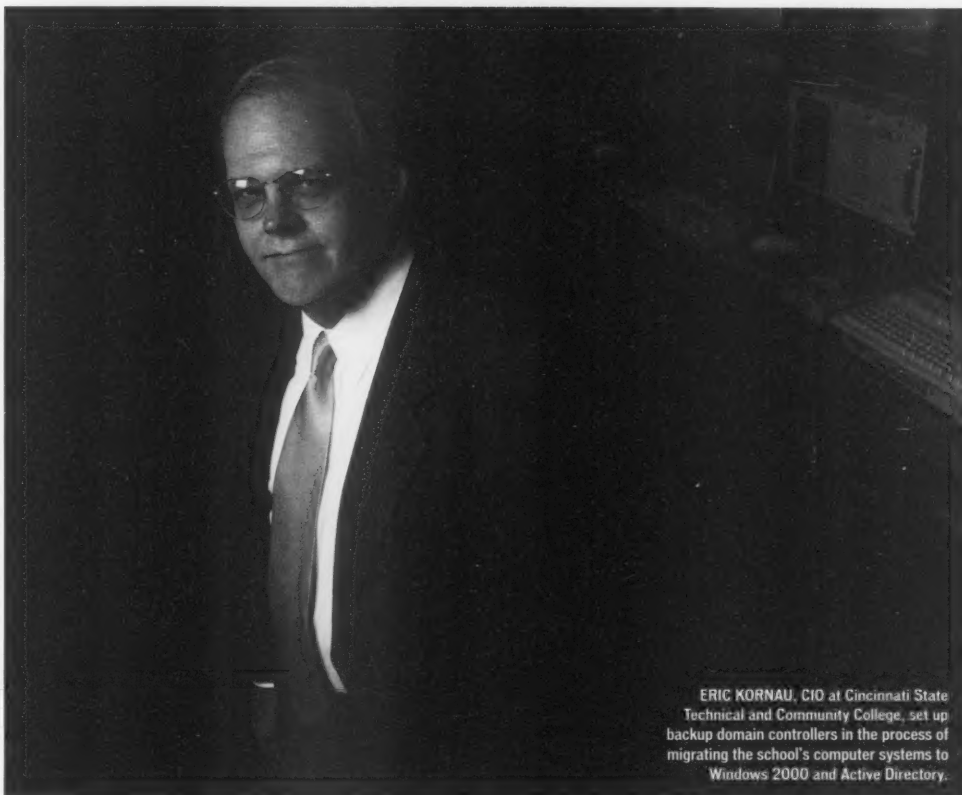
A major deployment of Windows 2000 at FreeMarkets Inc. has improved uptime in the data center, but current business conditions have slowed a planned companywide migration. See the second in our series of stories chronicling this deployment. **46**

QUICKSTUDY

A charge-coupled device (CCD) is a specially made integrated circuit that responds to light. CCDs are used to capture and store image data in telescopes, scanners, digital cameras and bar code readers. Find out more in this primer. **49**

MORE

Emerging Companies **48**
Skills Scope..... **50**



ERIC KORNAU, CIO at Cincinnati State Technical and Community College, set up backup domain controllers in the process of migrating the school's computer systems to Windows 2000 and Active Directory.

MIXED-MODE SURVIVAL TACTICS

UNTIL ALL DOMAIN CONTROLLERS ARE UPGRADED in a Windows 2000 migration, which can take a year or more, enterprises are in a state of directory limbo known as mixed mode. During that period, directory features from Windows NT domain controllers remain enabled while new Active Directory features, such as the ability to create universal and nested groups, are unavailable. Here's what users are doing to speed the transition and ease the headaches of running a mixed environment.

44

BRIEFS

Sun to Release New UltraSPARC III Chip

Sun Microsystems Inc. has announced that it will start selling a faster version of its 64-bit UltraSPARC III microprocessor by the end of October. The chip was first offered last September at 750 MHz in the company's Sun Fire servers and Sun Blade workstations.

Now at 900 MHz, the UltraSPARC III features lower power consumption, high reliability and lower memory latency than its predecessors, according to the company. Dallas-based Texas Instruments Inc. is Sun's supplier of the UltraSPARC III.

Createform Updates Formatting Software

Createform International Inc. in Waltham, Mass., has announced the release of Createform 2.0, its flagship electronic-forms formatting, management and production printing software. Version 2.0 features an updated design tool that lets users lay out forms and map data in a split-screen environment.

The software runs on Microsoft Corp.'s Windows NT and 2000 and IBM's AS/400 operating system. Small-business packages start at \$10,000.

Ipswitch Launches Software Upgrade

Faster file transfers, as well as the capability for multiple and concurrent file transfers, are two of the new features in Version 7.0 of the WS_FTP Pro file transfer protocol software application, which was launched last week by Lexington, Mass.-based Ipswitch Inc.

Also included in the new release are an improved navigation system and user interface, which were redesigned to make the program easier to use, according to the company. WS_FTP Pro 7.0 retails for \$45 per user for a boxed version or \$39.95 from the company's Web site at www.ipswitch.com.

Microsoft Explains XP Software Activation

Company revises, clarifies aspects of controversial antipiracy procedure

BY RUSSELL KAY

THE RELEASE of Microsoft Corp.'s Office XP application suite and its forthcoming Windows XP operating system has generated a buzz of controversy because of the antipiracy activation procedure the company has implemented.

To limit the illegal installation of Microsoft software on more than one machine, the company has chosen to limit the number of times and the conditions under which a specific software unit can be activated.

What's activation? The user installs one of these products in the usual way, including typing in a 25-character unlock

code. Thereafter, each time he runs the program, it asks to be activated via Ethernet or telephone. When the user connects with a Microsoft activation server, the program takes a snapshot of his computer's physical hardware—including CPU speed, hard drive size and

optical drive identifier—and sends it to the server, which uses the data

to generate an activation code and download it to the program. If the user chooses to activate by telephone, the process takes about five minutes; he will end up with a long code to type into the program.

If the user fails to activate the software within a certain time period or number of program uses, it will shut down much of

its normal functionality.

Recent *Computerworld* reviews of Windows XP and Office XP have discussed activation in rather negative terms, as a feature that benefits Microsoft rather than the users. But in the past few weeks, the company has made changes and clarifications to its activation policy.

Computerworld talked with David Jaffe, Microsoft's product manager for product activation, to set the record straight.

First, activation isn't new, he said. In the U.S., it was introduced with Service Pack 1 for Office 2000. And it has been used in other geographical areas, such as Brazil, for the entire life span of Office 2000.

Early reviewers and beta testers have expressed concern that this process could cause problems for legitimate users, particularly those who upgrade their computers or have to reinstall products after a

system crash that necessitates new hardware components.

Jaffe said a user who re-installs either Windows XP or Office XP after making minor hardware changes might not have to activate the software, because it would automatically be activated with the previous code. "If you're doing a ton of reconfiguration, then you might have to call, but it will work OK for most people," he said.

If a user has used up his quota of activations, then he must phone a special activation-only call center and explain the situation. "Our goal is to make sure that legitimate customers can use the product," said Jaffe. "In almost no instance will a real customer be denied."

Finally, it's important to note that activation applies only to packages bought via retail channels. Any organization buying a multiuser license—even for as few as two users—won't need to go through the activation process. Also, computers that come with Windows XP or Office XP preinstalled won't need to be activated. So activation should be a nonissue for most IT managers, systems integrators and consultants. ■

NEC to Launch New Servers

Series is based on fault tolerance

BY LINDA ROSENCRANCE

NEC Computers Inc. is set to launch in the U.S. its highly touted Windows 2000 server based on fault-tolerant technology from Stratus Technologies International SA at the end of this month.

The NEC Express5800/320La server, which is based on an Intel Corp. architecture, will be the first low-end fault-tolerant system offered in the U.S., said Lloyd Cohen, an analyst at IDC in Framingham, Mass.

"This will have a [huge] impact on the market," he said. "There has never been a low-end fault-tolerant system [in the U.S.] Previously, you were

talking \$100,000. This is the only [low-end] product out there."

The server will be priced at less than \$20,000, according to the company.

Fault-tolerant technology means that redundant components, such as multiple processors, hard drives, and RAM, perform the same functions at the same time, thereby backing up one another. The result is no interruption in processing, performance and data integrity in the event of a system failure.

The Express5800/ft Series employs dual modular redundancy configuration with duplicated CPUs, memory, hard disk drives and other main hardware in a compact housing.

NEC said failed components in its server can be detached

and replaced without shutting down the system. Accompanying software provides preventive and problem-resolution features, as well as remote monitoring, allowing users to diagnose problems before they occur, according to NEC.

Because of its 99.999% availability, the fault-tolerant server is suited for situations where

server downtime equals lost revenue, the company said. The servers are being marketed to small and midsize companies that require round-the-clock operations and complete data integrity in the event of a server outage.

Tokyo-based NEC Corp. began shipping the Express5800/ft Series servers to Japan on June 29, according to Mike Mitsch, business development director of enterprise server products at Sacramento, Calif.-based NEC Computers, a subsidiary of NEC Corp.

The server line is the result of a joint development project between NEC and Switzerland-based Stratus. NEC said the systems are designed for easy implementation and can be used without modifications with Windows 2000 software.

"This fault-tolerant system gives you higher levels of system integrity without complexity," Mitsch said. ■

NEC Express 5800/320La

Features of NEC's new fault-tolerant server series:

- ▶ Is based on Intel architecture
- ▶ Has fault-tolerant technologies from Stratus
- ▶ Has redundant components, such as multiple CPUs, hard drives and RAM
- ▶ Is priced at less than \$20,000



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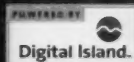
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Dot-com Brain Drain Helps Corporate Security

*Fresh from New Economy failures, newly hired
IT employees energize Old Economy security efforts*

BY VINCE TUESDAY

THE RECENT COLLAPSE of the dot-com market has brought significant benefits to those of us slaving away in Old Economy companies. Not only do we get to feel smug about not having bought into the share-option gold rush, but we also get to steal the brightest minds from the burned-out shells of these dot-coms.

We may not have in-office swimming pools. And no, your dog can't come to work with you. But at least we can pay your wages. These days, this simple, less-enlightened perk can attract experienced staff at excellent rates. Although we don't have any vacancies on our security team, we're still seeing security benefits from the influx of battle-scarred staff in other areas of IT.

The dot-com survivors have been building and trying to run systems aimed at the great unwashed masses, while many of our internal development staff have designed and deployed systems only for trusted internal users.

Some unexpected software behaviors are the result of the most unusual user responses, but given the number and sheer diversity of user systems on the Internet, any application that takes input from these users will face unpredictability that should give Web developers a healthy dose of paranoia. Watching your system fail repeatedly because of garbage or bizarre input teaches you to filter carefully for stability. This filtering also provides valuable security benefits.

In my career at large financial companies, I've realized that users place trust in such firms for all the wrong reasons. The most secure place I ever worked at was a small Internet service provider. It didn't have a security team.

It didn't spend a lot of money on commercial defense systems.

Instead, every staff member knew that a certain percentage of our customers would try anything to get free access or to break into our systems. Therefore, everyone carried out their work with security as a priority. I only wish I could build that same security sense in my own organization.

Many customers, particularly those in the financial services sector, seem to think that big (and old) is beautiful and that new or small companies aren't as secure as their monolithic competitors.

The smaller, newer companies thus dedicate more time and effort to securing their systems. This effort is necessary not only to protect themselves, but also to prove to distrusting regulators and customers that their systems are safe. This results in staff members who have successfully deployed and managed leading-edge technologies, albeit in small-scale ways.

Right now, I'm working on a major project. It's important to our organization and requires the highest levels of security. This means we are heavily involved and working closely with the project manager: an ex-New Economy employee who has weathered the ups and downs of the past few years. He knows from experience the right questions to ask vendors, and he has a good idea of our security requirements.

"The architecture calls for firewalls here, but as we won't be able to deploy an application proxy for this proprietary application, wouldn't a router with access control lists be just as good — and a lot cheaper?" he asked me the other day. After I closed my gaping mouth, I agreed. A project manager who understands security issues and cares about them — without reflexively

demanding the highest security technology he's heard of — makes my job a lot easier.

The other great find we've snapped up is a new testing team. We took them lock, stock and barrel from a shrinking dot-com, and they're now dealing with the first major release of a new version of our critical system.

Our security team sits within the infrastructure team. This lets us maintain good relationships with the systems administrators so they can promptly install patches and give us access to install our software. Unfortunately, it keeps us far away from developers, and sometimes our applications don't meet our standards.

We've been trying to work more closely with the test team to check the security of our applications. Security issues currently work their way back through the cycle into development, and our standards are implemented. This isn't as effective as getting our standards into the design process, but if we expended our energies on the design phase, we wouldn't see any results for months or even years. We need to make improvements quickly, and influencing the test process lets us see results immediately.

Positive Changes

This test team has taken the old team's plans and made impressive changes. The old plan required a single code release and a long initial test cycle, followed by a reissue of the code with all fixes, a quick regression test and launch. The new plan has three cycles of testing to find and catch bugs.

I'm sure this is a perfectly normal practice at small software houses, and it makes perfect sense, but it was a revelation for us. Our old, single test cycle found more bugs than we'd find with no test cycle at all, but the fixes to those bugs often introduced new bugs that weren't found in the regression testing. Even if the new bugs were found, the old schedule didn't allow time for fixes.

Over the past six months, we've spent a few weeks training some of the old test team on scanning tools like Nmap and Nessus and on buffer over-

THISWEEK'S GLOSSARY

Buffer overflow errors: When a program tries to store more data in a buffer than it can handle, the results can be unpredictable. Attackers can exploit this problem by figuring out how to make their code overflow outside the buffer and onto the stack, where it will execute. This is how a common software bug can cause security problems. However, developers can easily prevent this by following good coding practices.

LINKS:

www.cs.cmu.edu/afs/cs.cmu.edu/project/edrc-ballista/www/: Carnegie Mellon University's Ballista Project includes a program you can use to test how well software performs exception handling, or responds to unexpected input that might crash a system. The software is useful for identifying system vulnerabilities.

www.cs.wisc.edu/~bart/fuzz/: Fuzz, another random input utility from the University of Wisconsin - Madison, crashed more than 80% of Windows 2000 applications tested in the "2000 Windows NT Fuzz Report." Both the report and the utility are available for download.

www.insecure.org/nmap/ and www.nessus.org: Both Insecure.org's Nmap and the Nessus Project's Nessus security scanning tools are useful for spotting vulnerabilities.

flow finders like Fuzz and Ballista.

Soon after the new team leader joined the company, he arranged to meet with us. We thought it was to arrange for further training, but rather, he wanted to offer us a budget to fit a proper security test set into each of his three cycles of testing. He had been burned by a security issue in the past and had no intention of letting that happen again.

The fall of the dot-coms might be bad for the staffers who worked at them, and it certainly isn't helping market rates spiral upward. But I, for one, am happy to reap the benefits of the change in the market. ■

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Until a Windows 2000 migration is complete, administrators must live with a limited Active Directory implementation. The right tools and techniques can help facilitate the transition. By Drew Robb

WINDOWS 2000 Active Directory deployments can take much longer than expected. Just ask Eric Kornau, CIO at Cincinnati State Technical and Community College. "We have to teach Windows 2000 in our operating systems classes, so we need to have it on our network," he explains.

Kornau started planning the switch to Microsoft Corp.'s Windows 2000 and Active Directory (AD) last November and migrated 6,000 student

accounts during spring break. But the migration for about 2,000 staff accounts was interrupted by a million-dollar donation for storage equipment. Cincinnati State is configuring the new storage before consolidating the entire school, including all student and staff accounts, into a single AD in the fall. In the meantime, the school has a native Windows 2000 domain for the students, and the school administration has Windows 2000 application servers running under Windows NT 4.0 domain controllers.

Such time frames aren't unusual.

"AD migrations take a lot longer than most organizations anticipate," with many taking 12 to 24 months to complete, says Laura DiDio, an analyst at Giga Information Group Inc. in Cambridge, Mass.

But until all domain controllers are upgraded to Windows 2000, enterprises are in a state of directory limbo known as mixed mode, in which directory features from Windows NT domain controllers remain enabled while new AD features, such as the ability to create universal and nested groups, are unavailable.

New security problems arise with administrative privileges for NT domain controllers operating in mixed mode. AD dial-in options such as verifying Caller ID and applying static routes won't work. In addition, network administrators must support multiple operating systems, multiple directories and, in some cases, multiple versions of applications.

Because of the complexity of managing mixed-mode domains, experienced IT managers say it's best to make the switch as quickly as possible. The right tools and methodologies can make the transition to native mode easier and help manage a mixed-mode domain.

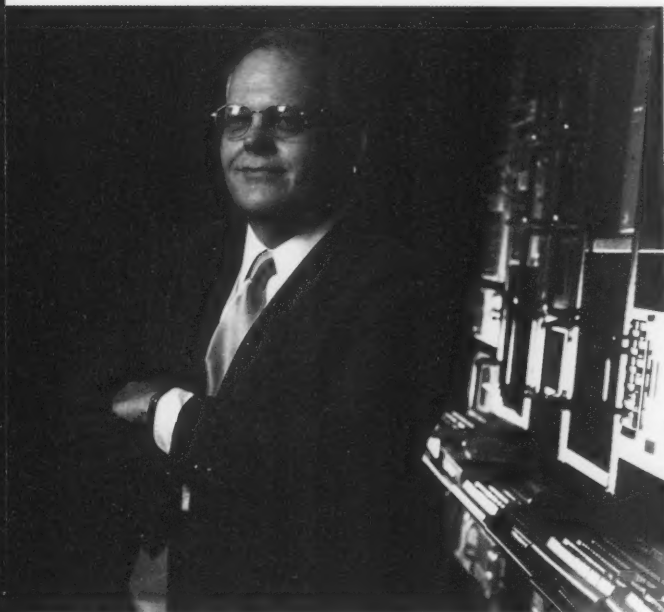
Faster Migrations

Managers can reduce the time spent in mixed mode by thorough planning and testing and by using domain migration tools. "You should always test everything out in the lab before making the switch," says Bryan Brunetti, an information systems engineer at pharmacy retailer CVS Corp.

Prior to migrating 5,000 workstations and 120 servers at CVS headquarters in Woonsocket, R.I., last year, Brunetti set up a lab to test the migration. He chose Powell, Ohio-based Aelita Software Corp.'s Controlled Migration Suite to model the migration before it began. The result: a smooth domain-controller transition to Windows 2000 and AD over two weekends, followed by an in-place upgrade of other NT servers to Windows 2000 Server.

During the domain-controller migration, however, Brunetti discovered a security problem. The account operators group had privileges to the Windows 2000 administrative tools for password changes, and Brunetti says he realized that those users were able to create Dynamic Host Configuration Protocol scopes and Windows Internet Name Service entries on NT 4 servers. The company immediately upgraded the servers to Windows 2000 to eliminate the problem.

MAKING ACTIVE DIRECTORY EASIER



We used the duplicate domain to model different scenarios. By the end of the week, we had written a comprehensive domain migration plan.

ERIC KORNAU (ABOVE), CIO, CINCINNATI STATE TECHNICAL AND COMMUNITY COLLEGE

Kornau followed advice from consultants at Quest Software Inc. in Irvine, Calif., about how to model the migration. He set up backup domain controllers, replicated the domain structure on those machines, upgraded them to primary domain-controller status and created a duplicate domain.

"We used the duplicate domain to model different scenarios," says Kornau. "By the end of the week, we had written a comprehensive domain migration plan."

But even the best-laid plans can go awry. "Despite extensive planning and design, nothing turned out exactly as we envisioned," says Mark Vernon, a senior network engineer at Pioneer Hi-Bred International Inc., a biotechnology firm in Des Moines, Iowa. He set up

a test lab to review migration tools but wasn't able to fully model his network's 18 domains and more than 4,000 groups and test all the procedures prior to the implementation. Vernon says that "until you start into the actual process, you don't really know how things will pan out."

His company is still in the midst of an AD migration that encompasses 5,000 users at hundreds of locations. Currently, Pioneer is running in what's called parallel mode: It has one NT domain that covers one group of sites and another Windows 2000 domain running AD in native mode for another. However, this has sowed confusion by creating two structures for controlling shared resources. Security administrators have trouble determining under

which structure a given user falls and groups and object access rights.

Although Vernon is using San Jose-based Net IQ Corp.'s Domain Migration Administrator to manage the changeover, many third-party migration tools are available, as well as the Active Directory Migration Tool (ADMT) utility that comes with Windows 2000 Server.

But both Vernon and Kornau found ADMT too basic for their needs and don't recommend it for large or complex networks. ADMT lacks such features as user password migration, migration modeling, exclusion of disabled or expired accounts and the ability to clean up the security identification history. Also, it supports only native-mode AD servers. That's why DiDio declares AD domain migration and policy-based management tools as must-haves. But they don't come cheap: She cautions that these tools add 25% to 30% to overall upgrade costs.

Surviving in Mixed Mode

For all but the smallest networks, administrators operating in mixed mode can benefit from good management tools. For example, Kornau uses Microsoft's FastLane for AD migration, along with Brampton, Ontario-based Nortel Networks Corp.'s Optivity and Hewlett-Packard Corp.'s OpenView to manage routers and switches. He also uses Microsoft's System Management Server (SMS) for inventory and reporting, though he may abandon it. "What we're finding is, if you have a native AD domain, you don't need it," says Kornau.

Brunetti uses a similar range of tools to run in mixed mode: OpenView operates as his top-level management and network monitoring tool; Mountain View, Calif.-based Veritas Software Corp.'s Manage Exec monitors services running on servers; SMS manages clients; and Windows Terminal Server supports remote management of Windows 2000 Servers.

Although AD may represent a serious hurdle, the tools exist to survive in mixed-mode limbo. Used wisely, they can help companies not only live to tell the tale, but also to eventually make the transition to native mode. ▀

Robb is a freelance writer in Tujunga, Calif. Contact him at drewrobb@mediaone.net.

MOREONLINE

For more information about migrating to Active Directory, visit our Web site. www.computerworld.com/ad

SHOULD YOU WAIT?

The release of **Windows.Net Server**, the successor to Windows 2000 Server, is expected in the first half of next year and will include a beefed-up version of **AD**. Major changes include the following:

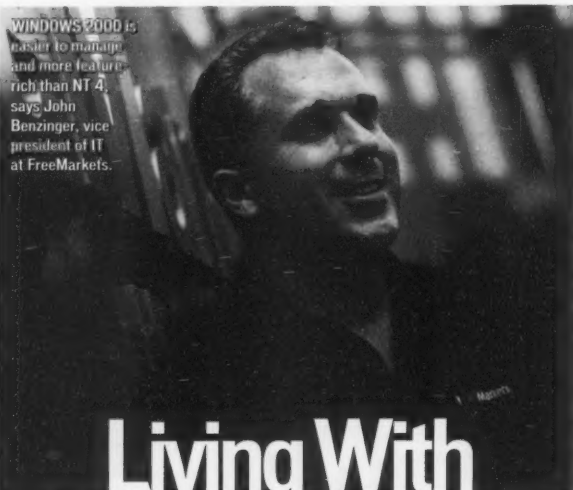
- Removal of the size limitation of **5,000 objects** per group
- Elimination of the need for a **global catalog** at each site
- The ability to **load directory content** from tapes, CDs or DVDs
- Support for the **inetOrgPerson** class (a popular means of identifying users)
- Better address-replication conflict resolution for **multivalued attributes** when replicating between domain controllers

As with the migration from Windows NT to Windows 2000, there's a catch: All Windows 2000 domain controllers **must be upgraded** to Windows.Net before the new features will be available. That's not to say you can't install Windows.Net when it becomes available. But a Windows.Net Server running AD will **automatically detect** Windows 2000 domain controllers on the network and won't support the new AD features.

So are the improvements worth waiting for? "While these are all good changes for the most part, they will have a relatively minor impact on an enterprise," says **John Enck**, an analyst at Stamford, Conn.-based **Gartner Inc.** "Really, it is a timing issue. I don't see any feature or set of features that would cause enterprises to delay." But if you're planning on deploying AD late this year or early next year, he says, you may want to wait a few months and **deploy the new version** rather than having to go back to upgrade all the domain controllers later.

- Drew Robb

WINDOWS 2000 is easier to manage and more feature-rich than NT 4, says John Benzing, vice president of IT at FreeMarkets.



Living With WINDOWS 2000

After initiating a major upgrade in its data center, FreeMarkets Inc. says uptime has improved, but tight budgets have slowed plans for a companywide migration.

By David Essex

Note: In a bid to improve availability, Pittsburgh-based business exchange FreeMarkets Inc. last fall began moving its data center operations to Windows 2000 [Technology, "Betting on Win 2k," Feb. 26].

The company consolidated SQL Server 7 databases on dual clustered Windows 2000 Datacenter Server systems running SQL Server 2000 that power its QuickSource auction management application. FreeMarkets also migrated its Web server farm to Windows 2000 Advanced Server and planned to move its other customer service applications, DirectSource and FullSource, and its back-office applications to the new system. Nine months later, Computerworld revisited FreeMarkets to check on the project's progress.

JOHAN BENZINGER, FreeMarkets' vice president of IT, says he's happy with the improved availability of the systems under Windows 2000 since migrating from Windows NT and SQL Server 7. "Our strategy that we laid out has played out exactly as we planned it," he says, referring to his quest for 99.999% uptime and better scalability for FreeMarkets' Web-based auction services. Benzing says manual inspection of individual server-availability logs shows improved uptime, but he doesn't have apples-to-apples metrics to compare the old and new systems, and he laments the industry's lack of a single comprehensive tool for monitoring his infrastructure.

FreeMarkets acts as a Web-based

sourcing service for industrial parts and other commodities and allows its users to set up and manage online bidding for supply contracts. Its technology ranges from QuickSource, for simple do-it-yourself auctions, to more full-featured FullSource and DirectSource, powered by its BidWare engine.

FreeMarkets has added three Windows 2000 management tools since the initial deployment last fall. The company installed Microsoft Application Center 2000 and will use it to deploy Web applications across multiple servers directly from its quality assurance lab. Benzing says he hopes that will cut down on the labor required to manually deploy applications on each server in a cluster. "It wasn't the easiest of implementations," he says, citing disappointing interoperability with FreeMarkets' existing load-balancing hardware and software.

The company also deployed its Active Directory infrastructure, which it runs in mixed mode, because many domain controllers companywide still run Windows NT 4. But the move to Active Directory helped reduce the total number of domain controllers, eliminating a point of vulnerability inherent in the NT architecture, Benzing says. Active Directory also supports FreeMarkets' availability strategy by letting administrators quickly add domains and isolate them, as well as better manage access rights and other security issues, he says.

In April, Benzing added Windows 2000 Terminal Services in Singapore and at operations centers in Brussels and Pittsburgh. Employees who lack desktop resources to run FreeMarkets' standard fat client can connect using the Windows thin-client software, and administrators use it to remotely administer the servers.

FreeMarkets also tried using Terminal Services to deploy BidWare upgrades to servers but dropped the idea. "It really wasn't working that well over dial-up," says Tony Bernard, director of technical architecture at FreeMarkets.

The economic downturn has curbed FreeMarkets' IT plans. Benzing has pushed back some projects, including upgrades of the BidWare engine, which still runs in SQL Server 7 on NT servers and drives the DirectSource and FullSource customer applications.

Upgrades of FreeMarkets' enterprise resource planning package from J.D.

Edwards & Co. in Denver and customer service software from Siebel Systems Inc. in San Mateo, Calif., have also been put on the back burner. "It's a matter of getting those certified for Windows 2000 as well as having the

time to do regression testing to not put our environment at risk," says Bernard.

Benzing says the upgrades will further improve availability and could be justified as cost-saving, productivity-enhancing expenditures. "But," he says, "there is the investment required to get to the cost-savings position."

Though the company's NT setup wasn't built for high availability, Benzing says availability targets have been met by following

vendors' recommended best practices, including preventive disk maintenance and periodic rebooting of NT servers.

Into early this year, much of the Windows 2000 migration involved moving and consolidating SQL Server 7 databases onto new servers running SQL Server 2000. FreeMarkets consolidated file and print servers that had seen "constant growth" under Windows 2000, says Brenda Basista, a Compaq Computer Corp. consultant who was brought in to run the database migration. In Pittsburgh alone, "we got rid of five file servers," says Benzing.

A major test came in early February, when FreeMarkets started offering a beta of QuickSource. Benzing says the launch, two weeks ahead of schedule, went smoothly.

He's still evaluating what it would take to move everything to Windows 2000 but says, "I don't have an end date in mind." Save for QuickSource upgrades, no new product introductions are planned for this year.

Looking back at an intense year deploying Windows 2000, Benzing says that besides improving availability, the operating system has proved to be easier to manage and more feature-rich, stable and flexible than NT 4. "I think our biggest challenge has been getting the ability to test some of the applications," he says. "This goes back to the business case: Would we rather spend our time testing apps or developing new functionality? Eventually, features and requirements of the apps themselves will dictate the migration." ■

Essex is a freelance writer in Antrim, N.H.

THE BOTTOM LINE


Win 2k Migration

PROS:

- Uptime increased
- Scalability improved
- Domain controllers consolidated under Active Directory

CONS:

- Substantial time and effort required for application compatibility testing

A black and white photograph of two men standing in a server room. The man on the left is wearing a light-colored button-down shirt and dark trousers, with his arms crossed. The man on the right is wearing a light-colored button-down shirt, dark trousers, and a lanyard with an ID badge. He has his hands in his pockets. They are standing in a long aisle between rows of server racks. The racks are filled with various electronic components and cables. The lighting is bright, coming from overhead fixtures.

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Workbrain Automates Employee Management

Its software tracks time and attendance and automates human resources activity

BY AMY HELEN JOHNSON

B RITISH AIRWAYS PLC, a London-based airline, flies high-tech airplanes that carry passengers across the Atlantic in less than seven hours. Calculating wages for its 3,000 North American employees takes considerably longer because of an inefficient system that processes time cards by hand, says Steve Pruneau, a project manager at British Airways' U.S. headquarters in Jackson Heights, New York.

Pruneau hopes to change that with the help of Workbrain Inc., a Burlington, Mass.-based vendor of employee management applications. After a three-month pilot project involving one airport and one call center location, British Airways is ready to roll out Workbrain Employee Relationship Management (ERM) Solutions to its employees.

Forms Add Function

Pruneau says Workbrain got the job at British Airways because its rules engine is flexible enough to handle the arcane wage-calculation algorithms based on Federal Aviation Administration regulations and labor union contracts.

David Ossip, founder and CEO of Workbrain, says that flexibility comes from the product's technical foundation as a messaging application. Everything in Workbrain ERM is a form with workflow and business rules attached, he says. This approach means that the rules are separate from the form objects, so changing, updating or deleting rules doesn't affect the rest of the customer's application.

Workbrain also integrates

with back-end payroll and human resources systems.

Another key technology in Workbrain is its Java 2 Enterprise Edition-based Web implementation, says Paul Hamerman, research director at consultancy Giga Information

Group Inc. in Cambridge, Mass. This feature gives it the advantages of rapid deployment and the ability to work with many devices, such as PCs, kiosks, handheld computers and wireless phones.

The Workbrain ERM system contains several modules, including time and attendance, statistical analysis, self-service human resources functions and a community network. This is a

much broader vision than that of competing vendors, which tend to concentrate on time-keeping, Hamerman says.

British Airways will eventually implement all the pieces of Workbrain ERM, says Pruneau. In the pilot project, Workbrain will eliminate nearly all the manual steps that now bog down the payroll process, he says. Tests have shown that using Workbrain improves the accuracy of the system as well; employee inquiries about pay have dropped. Pruneau also likes that Workbrain provides a permanent, easily accessible record of pay and hours worked, which has made analyzing expenses and overhead quicker, he says.

But companies considering Workbrain should be aware that the implementation phase is complex and requires an intense effort, Pruneau says. British Airways underestimated what resources it would take to bring the project to fruition. It required a full-time project manager, at least a few people to document work rules and user requirements, and a full-time user administrator to train users and handle questions.

The IT department has had it comparatively easy with Workbrain, Pruneau says.

Once the servers were up and running, IT stepped out of the picture. IT doesn't control the application; the business side of the company gets the problem calls and complaints first, then brings in IT.

Although Workbrain's forte is handling what Ossip calls "high-volume, high-value" transactions like clocking hours worked, the system also handles the low-frequency tasks that employees need to do, like updating personnel records.

Workbrain will eventually expand that side of the product and create "life event" workflow processes that guide employees through the human resources steps when there's a major change in their lives, like getting married. ■

Johnson is a contributing writer in Seattle.

the buzz

STATE OF THE MARKET

Taking the Employee's View

When it comes to employee management systems, says Giga Information Group's Paul Hamerman, there are two approaches a company can take. One is to examine problems from the perspective of the company's human resources department and focus on improving the department's efficiency. The other is to take the employees' view in an effort to make them more productive in their jobs. Back-end ERM systems fall into the first category, while Workbrain's system fits the latter.

Established human resources software vendors like PeopleSoft Inc. in Pleasanton, Calif., don't yet have as good a set of employee-focused tools as Workbrain, but they're working on them, Hamerman says.

Workbrain faces the most competition from vendors with time-and-attendance products, even though its product offers broader features such as support for online vacation time and work scheduling, workforce communities, uniforms and equipment purchases, and advanced functions to support union-based work environments, according to Hamerman.

Kronos Inc.

Chelmsford, Mass.
www.kronos.com

Kronos is the dominant player in the time-and-attendance market, says Hamerman. Its core products, Workforce Central and Timekeeper Central, have been redesigned so they can run on any Web-enabled device. But Workbrain offers a wider range of applications that are important to employees, he says.

eLabor Inc.

Camarillo, Calif.
www.elabor.com

ELabor is most competitive with Workbrain with the time-and-attendance capabilities of its Workforce Suite, says Hamerman. The other modules handle areas that Workbrain doesn't touch, such as recruitment and project management. ELabor also has a hosted service that's more attractive to smaller businesses than the large, global enterprises Workbrain targets, he says.

— Amy Helen Johnson



WORKBRAIN CEO David Ossip says his company's forte is handling a company's "high-volume, high-value" transactions.

Workbrain Inc.

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Suite 300
Burlington, Mass. 01803
(781) 270-0631

Web: www.workbrain.com

The technology: Web-based self-service human resources applications, including time-and-attendance modules. The software, built using Enterprise Java Beans and XML, also supports wireless connections.

Company officers:

- David Ossip, founder and CEO
- Scott Morrell, vice president of technology
- David Stein, vice president of sales

Milestones:

- Dec. 1999: Company founded
- April 2000: First product released

- May 2001: Raised \$20 million in second-round funding
- June 2001: Version 2.5 released

Employees: 105

Products/pricing: Workbrain ERM Solutions: \$50 to \$200 per seat

Burn money: \$25 million from NB Capital Venture Partners, ABS Ventures, Accenture Technology Ventures and private investors

Customers: British Airways, Russell Corp., Tennessee Valley Authority

Red flags for IT:

- The product requires a significant effort to set up rules and forms.
- Established human resources software vendors are working on adding similar tools.

COMPUTERWORLD
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Charge-Coupled Device

BY TOM THOMPSON

AT THE HEART OF today's digital imaging devices are charge-coupled devices (CCD). A type of semiconductor that's sensitive to light, a CCD consists of a 2-D array of individual elements, each of which is, in essence, a capacitor — a device that stores an electrical charge. (Thus explaining the *D* and one of the *C*'s in the acronym.)

A CCD's charge is created when photons strike the semiconducting material and dislodge electrons. As more photons fall on the device, more electrons are liberated, thus creating a charge that's proportional to the light's intensity. With a 2-D array, you can capture an image.

Put another way, each CCD represents a single-image pixel. Today's best digital still cameras have sensors with up to 6 million pixels.

The challenge lies in reading these charges out of the array so they can be digitized. To do this, each individual CCD detector, or pixel, consists of

DEFINITION

A charge-coupled device (CCD) is a specially made integrated circuit that responds to light. CCDs are used to capture and store image data in telescopes, scanners, bar code readers, and digital still and video cameras. A good CCD can produce an image in extremely dim light, and its resolution (i.e., sharpness or data density) doesn't degrade in low light the way those of film cameras do.

three transparent polysilicon gates over a buried channel of doped photosensitive silicon that generates the charge. The channel is flanked by a pair of channel stop regions that confine the charge.

To read and digitize a particular CCD's charge, the voltages of the three gates are cycled in a sequence that causes the charge to migrate down the channel to the next gate, then to the next pixel, and ultimately down the row until it reaches the end column, where it's read out into a serial register and ultimately sent to an analog-to-digital converter. Think

of this process as something like a bucket brigade, where water in a bucket at the beginning of a line is transferred to the end of the line after being passed from bucket to bucket. This charge transfer occurs with an efficiency greater than 99.9% per pixel.

The sequence of moving the charge from one gate to the next is called *coupling* (the other *C* in CCD).

Coaxing Out Color

But after that's all said and done, the CCD imaging array is only sensitive to light intensity, not color. One way to capture a color image is to use three CCD arrays, each covered by a filter (usually produced by painting the CCD's surface with dye) that passes one of the three primary colors — red, green or blue. Onboard camera electronics merge these primary components into a color pixel. Because it requires three CCD arrays, this system is found only in high-end cameras and camcorders.

A low-cost method applies a special color grid, known as a Bayer pattern, over the imaging array (see Figure 2). This pattern of alternating red-green and green-blue filters enables a single CCD array to capture a color image.

Half the filters in this layout are green because the human

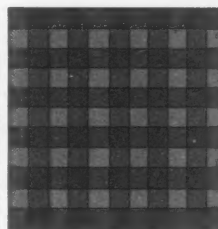


Figure 2: The Bayer Pattern
A pattern of alternating red-green and green-blue filters enables a single CCD array to capture a color image.

eye is most sensitive to that color. A digital signal processor interpolates a pixel's two missing color components by taking the average of neighboring pixels that have these components. That is, for a CCD element with a red filter, the processor reconstructs its green and blue components by combining and averaging the values from adjacent elements with green or blue filters.

Using a Bayer pattern offers simplicity of design, but it has two disadvantages. First, it throws some information away, so there's a definite loss in image resolution. Second, the technique assumes gradual changes in light intensity throughout a scene. For images with sharp light transitions, the interpolation process generates artifacts — colors that

weren't in the original.

Some CCD imaging arrays use a different color pattern to generate color from a CCD array. Notably, some Canon digital cameras use a subtractive color pattern — cyan, yellow, green and magenta — with a different interpolation algorithm, to produce a color image.

The CCD, invented at Bell Labs (now part of Murray Hill, N.J.-based Lucent Technologies Inc.) by George Smith and Willard Boyle in 1969, was originally intended to store computer data. But that function was taken over by faster technologies. By 1975, CCDs were being used in TV cameras and flatbed scanners. In the 1980s, CCDs appeared in the first digital cameras. CCDs are widely used today, but they do have some drawbacks:

FADING. Although the coupling process is quite efficient, moving the charges along a row of many hundreds or thousands of pixels adds up to a noticeable loss of charge.

BLOOMING. If too many photons strike a CCD element, it gets "filled up," and some of the charge leaks to adjacent pixels.

SMearing. If light strikes the sensor while a transfer is taking place, it can cause some data loss and leave streaks behind bright areas of the image.

EXPENSE. CCDs require a different manufacturing process from other computer chips (such as CPUs and memory), so specialized CCD fabrication plants are necessary. ■

Thompson is a training specialist at Austin, Texas-based Metrowerks.

Reading Charges Out of an Array

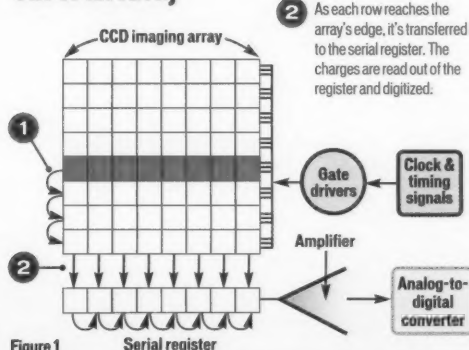


Figure 1

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THE PROJECT

“By sitting down with people and talking through a project, you learn a great deal.”

JOHN OLIVER, TRUE NORTH COMMUNICATIONS

Good IT project managers are hard to find — and opinions vary as to the best ways (and best places) to find them. Writer **Mary Brandel** asked two industry veterans to discuss the traits they desire most in project managers and the best way to find people with those characteristics.

John Oliver is deputy CIO and vice president of critical business systems at Chicago-based True North Communications Inc., one of the world's top 10 global advertising and communications holding companies.

George Nassef is CIO at Hotjobs.com, a leading Internet-based recruiting company in New York.

Project management is a field that requires people with competencies in three subject areas: technology, business and behavior. Ideally, you'd want to hire a project manager with all three traits, but if you had to choose only two, which would they be?

Oliver: I would rather have the candidate without the IT background, as he or she would be far more likely to deliver a solution that will meet the business needs than a technical person with little understanding of the business. At the same time, he or she will need a strong technical person on the project team to help communicate with the technical staff.

Nassef: I'd choose technology and behavior. In order to motivate IT workers, you need an understanding of the challenges they face, in addition to an understanding of human behavior and how to motivate teams. Unless the project is of an enormous scale, the busi-

ness understanding would be handled above the project manager; that is, the business goals would already be translated into project goals.

There's an IT project that absolutely must be completed on time, and you learn that the project manager has been taking short-cuts on testing to meet the deadline. You can see that it has put the project on schedule, and the code seems to work well. Do you intervene?

Oliver: Yes. Ultimately, this requires a risk assessment: Is the risk of missing the project deadline greater than that of bringing up a system that will have problems that good testing would reveal? I would pull together the management team that sponsored and/or is impacted by the project and let them decide whether to delay the project. Ultimately, this is a business decision, not a technical one.

Nassef: I would intervene because one of the tenets of project management is communicating in all directions, so there shouldn't be any surprises. The right answer might have been to shortcut testing, and there are ways to mitigate the risk of that. But intervention and due diligence is the role of the officer in charge of the project.

What is the most fruitful place in the organization to look for an untried IT project manager?

Oliver: Good project managers are difficult to find because those skills are not actively developed in most organizations. You can, however, look for a strong manager with a good understanding of the business. Our system conversion [after True North purchased New York-based Bozell Group, a \$2.2 billion agency network] was headed by the former [chief financial officer] from one of our offices. We spent almost two years moving onto the new system, and it was nice to have a person on the project who could effectively communicate with the CFOs and general managers.

Nassef: Customer support is a good place to find people with a good blend of skills for project management. They understand escalation, communication and customer needs, they're exposed to IT, and they know the company well. They deal with all areas within support and tend to be at the end of the food chain when an IT

GRANT KESSLER

Perfect MANAGER

project is being rolled out, so they understand the repercussions of poorly run projects.

If you had to choose between the following characteristics in a project manager, which would you choose and why: can-do optimism or assume-the-worst realism?

Oliver: Can-do optimism. Ideally, I want a candidate who is able to anticipate all the things that can go wrong and head them off, but I would be concerned if the person was always assuming the worst, because he wouldn't do a good job of cheerleading and motivating people.

Nassef: It's really a balance. If I just chose one, you'd end up with two wrong answers.

Warm and fuzzy or down-to-business?

Oliver: Down-to-business. I want someone with people skills, but the person has to make sure critical tasks are getting done.

Nassef: It depends on the project. The tighter the deadline and the more aggressive the risk, the less time there is to gain consensus vs. enforcing execution. What's more important is to earn the respect of the people you're interacting with.

Detail-oriented or visionary?

Oliver: Detail-oriented. It's a tough balance, but you need someone who's digging down and making sure critical business issues aren't missed.

Nassef: It depends on the project. If you're building the complex features that Hotjobs has online, you've got to be detail-oriented. But four years ago, when it was just the founder and several programmers, you very much needed vision.

How damaging to a project manager's track record are project failures and cancellations?

Oliver: If there were three or more failures, that would seriously impact whether I would want to use that person on a project. But if they had a couple of failures and had good reasons for those failures, it wouldn't bother me.

Nassef: It depends on the company and its appetite for risk vs. reward.

Hotjobs has always been a company that moves fast, builds quickly and learns from failure. Larger companies that don't have an appetite for taking risks

and getting high rewards might not be so forgiving.

When attempting to expedite a project that's behind schedule, you find out that a project manager has cut out requirements analysis and design and has jumped right into coding. Do you intervene now or wait to see what happens?

Oliver: I'd talk to the project manager and ask to see a requirements spec and design. If they don't have it, I'd tell them why they need one before they go on.

Nassef: The rule book says there is a standard methodology for rolling out projects. But the rule book doesn't apply in all cases. Before I made a judgment, I'd determine whether the project was really suffering.

A project is late and over budget. The project manager asks for more developers. What do you do?

Oliver: I'd say no. Their learning curve is so high in trying to catch up with the rest of the team, the productivity gains are minimal. You're better off asking people to work longer hours or on weekends.

Nassef: I've had that happen and have seen it succeed and also not succeed. It's certainly an early warning to jump in and determine all the facts at hand. If the bottleneck is in development, the solution might be a change of skills, not additional programmers.

What advice would you offer an aspiring project manager?

Oliver: Communicate, communicate, communicate. By sitting down with people and talking through a project, you learn a great deal about why you're doing what you're doing.

Nassef: Understand that different companies have different risk vs. reward appetites. If you want to make the judgment calls I'm talking about, small companies offer those. Or, if you want more of a rule book approach, look to a larger company. ▀

Brandel is a freelance writer in Newton, Mass.

JOHN RAE

To motivate IT workers, you need an understanding of the challenges they face.

GEORGE NASSEF, HOTJOBS.COM



Advertising Supplement

Diversity in IT

When your business is built and sustained through long-term client relationships, employees play a critical role. This belief has led to Boston-based Keane, Inc.'s initiative to demonstrate that recruiting, developing and promoting a diverse workforce makes good business sense.

Just this summer, the 35-year-old information technology consulting company formed a Diversity Task Force involving employees from business units in the United States and the United Kingdom. Betty Black, Diversity Task Force team leader and director of employee and organizational development, says the committee will review **Keane's** policies, procedures and management practices. It's part of an overall effort to demonstrate that **Keane**

values and leverages the individual and cultural diversity of all employees and is recognized as an employer of choice in our industry. "We believe this effort will allow the company to improve personal career opportunities and retain superior talent," Black says. "We know that we need to leverage the creativity and innovation of every person here and support our multicultural client base."

Keane, Inc. plans, builds and manages application software for companies and government agencies. During the second quarter, while many IT firms were slowing, **Keane** signed on record levels of new business, a significant amount from




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Req'd: an MSCS plus at least 1 year of relevant exp. MCSE pref'd. Send resume to: Mr. Richard Chi, California Pacific Bank, 601 Montgomery St., San Francisco, CA 94111. EOE

Software Developer wanted by

Online Financial Systems Dev Co in CA. Participate in design & dev of portfolio management systems for brokers; design software & browser based content; assist in dev of back-office download program. BS in Comp Info Systems or Comp Sci & 6 mos exp in job offered or 6 mos exp in Systems Dev req. Respond to: HR Dept/Plaid Brothers, 26 Technology Drive, Irvine, CA 92618

Next Generation Professionals, LLC (N&P) has openings for

ORACLE Database Administrators, Senior ORACLE Database Administrators and other IT professionals. ORACLE Database Administrators must have two years of ORACLE database experience, or ORACLE certified professional certification. Senior ORACLE Database Administrators must have four + years of experience. We have positions in the following areas: Irvine, CA; San Francisco, CA; Chicago, IL; Denver, CO; Colorado Springs, CO; and other locations. Please send your resume by e-mail to: harrischopra@yahoo.com.

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Product Developer to design, develop, analyze, test, supervise and coordinate the implementation of computer software for use in multi-platform e-publishing applications written in Java, including performance tuning, document encryption using DES symmetric algorithm with the aid of Java Cryptographic Extension (JCE), implementing native code calls within Java code using Java Native Interfaces (JNI) and code obfuscation. Requires Bachelor's or equivalent level degree in MIS, Computer Science, Engineering, Math, Statistics or closely related field. Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicants must be able to perform job duties on date of application. Salary \$64,000 to \$80,000 per year, plus company employee benefit plan; 40 hours per week. Send resume to: Darrel Dettler, Ion Systems, Inc., 107 Mississippi, Crystal City, Missouri 63019-1633. An EOE. Equal Opportunity Employer.

Product Developer to design, develop, analyze, test, supervise and coordinate the implementation of computer software for use in multi-platform e-publishing applications written in Java, including performance tuning, document encryption using DES symmetric algorithm with the aid of Java Cryptographic Extension (JCE), implementing native code calls within Java code using Java Native Interfaces (JNI) and code obfuscation. Requires Bachelor's or equivalent level degree in MIS, Computer Science, Engineering, Math, Statistics or closely related field. Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicants must be able to perform job duties on date of application. Salary \$64,000 to \$80,000 per year, plus company employee benefit plan; 40 hours per week. Send resume to: Darrel Dettler, Ion Systems, Inc., 107 Mississippi, Crystal City, Missouri 63019-1633. An EOE. Equal Opportunity Employer.

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Software Professionals

Majesco Software Inc., a leading IT consulting firm, is looking for qualified IT professionals. (Some frequent travel to various job locations may be required.)

We need experienced Software Engineers/Sr. Soft Engineers/Programmer-Analyst in the skill areas of Siebel-Scopus/Venture/Clarity/Sinknet.

We are also looking for PKA/SES/SES with Java/ASP/EJB/PowerBuilder/VisualBasic/VB++/SQL-Server/Oracle/Ingres/Informix experience.

Qualified applicants send resumes to: HR Manager, Majesco Software Inc., 222 W. Lee Collins Blvd. #539E, Irving, TX 75039.

CyberTech Systems, Inc. provides IT strategy consulting, systems integration and software development to clients nationwide. We have immediate, full-time opportunities for both entry-level and experienced professional in any of the following areas:

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Job opportunities are also available for Sales Managers, Marketing Managers, Business Managers, Human Resources Managers, Controllers and Technical Recruiters. Bachelor's or Master's degree required, depending on position. We also accept the foreign education equivalent of the degree or the degree equivalent in education and experience. Excellent benefits. Send confidential resume and salary requirements to: CyberTech Systems, Inc. 1111 West 22nd Street, 8th Floor, Oak Brook, IL 60523 or 8 Newsummy Interplex Suite 209, Newose, PA 19053. EOE.

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Programmer/Analyst - all levels
Database Administrator
Senior Program Manager
Sources Software Engineer
Senior Consulting Engineer

New York

Computer Scientist
Windows NT Technician/Integrator
Project Manager

Ohio

Web Developer

Travel may be required. Salary DOE. Proof of legal authorization to work in the U.S. req'd. Some positions may require a Bachelor of Science or Master of Science degree plus experience.

Send ad & resume to AdR31281-7, Attn: Erika Daggett, 2100 East Grand Avenue, El Segundo, CA 90245. Indicate specific title/location of job for which you are applying on your application letter. EOE

SOFTWARE QUALITY ASSURANCE ENGINEER to design and develop quality assurance strategy for all testing phases of the product life cycle. Create and execute automated testing scripts and manual functional tests using valid test procedures and test cases, as well as development tools used in the installation, including MS SQL Server, Java Script, Visual Basic, Visual Basic Script, and Acute under Windows NT operating system. Assist in detecting the origin of problems by replicating defect scenarios and report results into defect tracking system. Test program for validity of results, accuracy, reliability, and conformance to company's standards. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with five years of progressively responsible experience in the job offered or as a Programmer/Analyst. Competitive salary offered. Apply by resume to: Andrew Burlants, Republic Mortgage Insurance Company Corp., 190 Oak Plaza Blvd., Winston-Salem, NC 27105; Attn: Job SM.

Business Analyst

Using at least 2 years of experience writing ABAP/4 specifications and SAP configuration skills, the Business Analyst will design modifications for enhancements, develop functional and technical specifications and database design for ABAP/4 enhancements in the MM Module. Heavy emphasis on configuration. Also responsible for program debugging, testing/deployment, developing, and maintaining archiving and data retrieving procedures. Bachelor's Degree in Computer Sc. or Business Administration required. Salary to the mid \$70's. Applicants must have legal authorization to work permanently in the U.S. For consideration, please send resume and salary history to: Joe Kozlarek, Human Resources Director, at jko_zlarek@purdumills.com, PO Box 66812, St. Louis, Missouri 63166. E/O/E.

SOFTWARE ENGINEER to design, develop, test, implement, and support computer software for various Internet applications using C, C++, Java, JavaScript, JSP, JDBC, and Weblogic under Windows, UNIX, and DOS operating systems. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered; A.M.S. degree with a demonstrated ability to perform the stated duties gained through academic coursework/previous work experience will be accepted in lieu of a B.S. degree and two years of experience. Competitive salary offered. Apply by resume to: John A. Christian, VP Administration, 1st AG, Inc., 5901 A Peachtree Dunwoody Rd., Suite 275, Atlanta, GA 30326; Attn: Job WY.

Senior Systems Analyst. Analyze, design, develop, test & implement business systems using object oriented methodology and client/server technology. Prepare and update system documentation. Provide user training. Tools: Oracle, Unix, SQL, PL/SQL, Visual Basic. Bachelor's in Comp. Sci. + 1 year exp. in job offered or as a Programmer/Analyst req'd. Prev. exp. must include Oracle, PL/SQL, Visual Basic. 40 hrs/wk, 9am-5pm, \$47,689/yr. Applicants must show proof of legal authority to work in the U.S. Send 2 copies of resume & cover letter to Illinois Dept. of Employment Security, 401 S. State St., North, Chicago, IL 60605. Attn: Leila Jackson, Ref# V-IL 24565-J. Employer Paid Ad. No calls.

SENIOR SOFTWARE ENGINEER to design, develop, implement, test and maintain telemanagement application software for the hospitality industry using RPG III & IV, CL, C/CL, OS/400, MC Series, RDBMS, TCP/IP, RLU DBU, Hawkeye Source Management Utility, and SDA on AS/400 platform. Require: B.S. degree in Computer Science/Engineering, or a closely related field with five years of progressively responsible experience in the job offered or as a Programmer/Systems Analyst. Extensive travel on assignment to various client sites within the U.S. is required. Off-hours technical support 24x7. Accessibility by pager. Competitive salary offered. Send resume to: Dina Gallo Tarro, Executive VP, Systems Design & Development, Inc., 800-A, NW, 17th Avenue, Delray Beach, FL 33445; Attn: Job AM.

Oracle Applications Sr. Consultant. Duties: Design, implement, integrate & set-up ERP & client/server solutions using Oracle Applications (Financials) Conduct AS-IS analysis for various legacy systems. Map business requirements to new appl. & identify potential gaps. Decommission systems to be replaced by Oracle applications & decide on conversion strategy. Prep. prelim. system design. Analyze ind. work units in detail & build reports, interfaces, conversions & extensions. Integrate Oracle Appl. w/legacy systems using SQL & PL/SQL. Design custom reports & forms using Developer 2000 (Forms 5.0/6). Reports 3.0/6). Require: B.S. (or foreign equiv.) in Comp. or Info. Sci., Eng., Bus. Adm. or related field & 2 yrs. exp. in the job offered or 2 yrs. exp. as a Consultant, Software Eng. or Prog./Analyst. Exp., which may have been obtained concurrently, must incl. 2 yrs. exp. in the design, implementation & set-up of ERP using Oracle applications & 2 yrs. exp. using SQL & PL/SQL. EOE 40 hrs/wk; 8:00 a.m. to 5:00 p.m. Salary \$75,000/yr. Send resume (no calls) to: Diane Tucco, AnswerThink, Inc., 817 W. Peachtree St., Ste. 800, Atlanta, GA 30308. Must have legal auth. to work in U.S.

Systems Analyst. Multiple positions available. Master's Degree or equivalent in Computer Science, Math, Science, Engineering or similar field. Bachelor's Degree in Computer Science, Math, Science, Engineering or similar field and five years of progressive experience will substitute for Master's Degree. Responsibilities include managing a team in designing, developing and implementing functional specifications of Computer Software Systems using object-oriented analysis; reviewing and analyzing status reports; ensuring that projects meet client specifications; ensuring timely delivery of E-R/Context diagrams following normalization processes; designing structure charts for the development of the server and client applications; incorporating Open System Foundation ("OSF") architectures to ensure rigid conformance to standards; working in UNIX Relational Data Base Management Systems ("RDBMS") and Windows or multi applications environments and in RDBMS areas of Sybase and Oracle; ensuring compliance with ISO Quality Management System and SEI CMM Level 3 processes. Requires proficiency in Internet Bill Presentation and Payment Applications. Must have systems analysis experience utilizing Visual Basic 5.0, C, C++, GUI Tools, Java, Object Oriented applications, Oracle 7.3 server or higher, PowerBuilder, MS-Access or ER Win Database Design Tool. Must be willing to travel. Salary \$70,000/yr & up, depending upon experience and responsibilities. Send resumes to: MIT (USA), Inc., 1050 Crown Pointe Pkwy, 5th Floor Atlanta, GA 30338. REF-Systems Analyst (HR), or fax resumes to 770-290-6077.

Systems Analyst. Location: Boulder, CO. Duties: Analyze & design new and existing modules to support changes in the current business environment using Progress 4th GL GUI. Analyze web applications using Web-speed. Manage Syntel/FPS manufacturing & accounting system. Investigate & resolve system-related questions and issues. Analyze code to find causes of errors and review programs. Requires: B.A. in Engineering, Business or related field plus 3 yrs. exp. in the job offered or 3 yrs. exp. as a MIS Analyst. Exp., which may have been obtained concurrently, must include 2 yrs. exp. using Progress 4th GL GUI. 40 hrs/wk. Send resume (no calls) to: Suzanne Pelletier, BI, Inc., 6400 Lookout Road, Boulder, CO 80301.

Software Engineer III

Pays \$80,000 per year. Duties include full life cycle development from gathering user requirements to designing, implementing, testing, debugging, and deploying large object oriented applications. BS in Engineering or Computer Science and 4 years' software development experience required. Temporary assignment relocation throughout the United States is required. Approximately 30% work time outside company's metro area. Apply at Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, TX 78701. LO#TX1102269. Ad paid by an Equal Opportunity Employer.

IT PROFESSIONALS

StaffMastersUSA, a premier provider of Information Technology staffing and consulting resources located in Harrisburg, PA is seeking IT Professionals possessing MS/BS or equivalent and/or relevant work experience for employment. Must be willing to travel and relocate as required. Please forward resumes to: Shelly Ryan @ StaffMastersUSA.com

Senior Programmer Analyst. Design, develop, implement and test database systems applications for business clients. Develop program specifications. Develop user documentation. Troubleshoot systems. Tools: SOLARIS/UNIX, Clear Case, C-DB Library Programming, Sybase, Powerbuilder, Java, Galaxy. Bachelor's degree in Comp. Science* and two yrs. exp. in job offered or as Programmer Analyst required. Prior exp. must include PowerBuilder, Sybase. (*Will accept Bachelor's degree in any engineering field). 40 hrs/wk, 9am-5pm, \$52,700/year. Applicants must show proof of legal authority to work in the U.S. Send 2 copies of resume & cover letter to Illinois Dept. of Employment Security, 401 S. State St., North, Chicago, IL 60605. Attn: Lydia Clarke. Reference #V-IL2658-E. Employer Paid Ad. No calls.

SENIOR SOFTWARE ENGINEER to design, develop, implement, test and maintain telemanagement application software for the hospitality industry using minimally Progress V.8, UIB Development Tool, Xponent 4GL Generator, and Magnus Development New Source Code Management Tool on Windows NT, UNIX, and AS/400 platforms. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with five years of experience in the job offered or as a Programmer/Analyst. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Send resume to: Dina Gallo Tarro, Executive VP, Systems Design & Development, Inc., 800-A, NW, 17th Avenue, Delray Beach, FL 33445; Attn: Job MW.

NetRatings, Inc., a global leader in Internet media and market research, is seeking qualified candidates for the following positions:

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Send resume to: Anh Nguyen, NetRatings, Inc., 890 Hillview Court, Suite 300, Milpitas, CA 95035.

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Code Red

chief technology officer at a pharmaceutical supply company in the Northeast who requested anonymity. "There are other Web servers out there. Microsoft's customers have to demand better software."

Robert Odom, chief operating officer at AFAB International Inc., a security equipment reseller in Fort Lauderdale, Fla., said that because of security concerns, his company has completely removed Microsoft Outlook from its systems and has removed "as much of [Internet Explorer] as we can."

Microsoft issued 100 security bulletins last year related to its software and 42 so far this year, according to information on its Web site. Even so, Steve Lipner, manager of Microsoft's Security Response Center and chief of the Secure Windows Initiative, said the company undertakes a massive effort to find security flaws in products "before they get out the door."

The centerpiece of the effort, said Lipner, is a program called Prefix. It scans the entire code base of the Windows operating system and all Office products for potential vulnerabilities. When one is found, it identifies the "offending cod-

ing practice that caused the vulnerability," he said. It's an effort that represents a "significant investment" across the company and one that "absolutely has commitment from the top," Lipner said.

So how did yet another flaw in Microsoft's Internet Information Services software make it out the door?

"Security and software development are human endeavors where mistakes are going to happen," Lipner said.

Of concern is that critical services like the Federal Aviation Administration, medical services and the power grid increasingly use commercial software. The fear, based on the Microsoft experience, is that some of this software could be unreliable and full of security holes.

It's only a matter of time before consumers and businesses start to demand more reliable and secure software, said Dave McCurdy, executive director of the Internet Security Alliance. "When health and safety concerns are raised, then there are going to be higher expectations of accountability," he said.

"People have every right to expect reliable, secure software," said Jay Nickson, a security trainer at Ronin Software Group in West Chesterfield, N.H. He added that developers should be responsible if errors in their software result in lost

profits, hours or bodily harm. He even suggested that it might be time for a "software users' bill of rights."

But Alan Paller, director of the SANS Institute, a security research organization in Bethesda, Md., said that's a long shot. A routine check of the terms of the agreement included with every shrink-wrapped package of software from Microsoft and other developers would show that users "have no rights at all," he said. ▀

MOREONLINE

What do you think? Post your opinion in our online discussion forum at www.computerworld.com/codered.

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CRM

son, a vice president in the company's customer service unit. "What's important to note is that during this financial crisis, this CRM technology was deemed to be critical and essential," he said.

Indeed, the project was in serious jeopardy last fall when the company's financial problems began to escalate, said Hutchison. But senior management decided to authorize the project in October. "From the cash flow results today, it's proven that we've made the right choice," he added.

Although Hutchison didn't specify how the software has affected Rosemead, Calif.-based SCE's bottom line to date, he did say that studies show that the software can help the utility slash 35 seconds off the length of each call, which should result in a \$3 million annual efficiency improvement.

Meanwhile, PG&E Corp. in San Francisco, which filed for bankruptcy protection in April, is rolling out a set of call center applications from vendors such as SPL WorkGroup Inc. in San Francisco and

Code Red Scorecard

■ Highest number of scans detected in 1 hour (Aug 2): **59,517**

■ Number of infected hosts:

▶ Round 1 (July 19): **280,391**

▶ Round 2 (July 31 - Aug 3*): **343,345**

SOURCE: SANS INSTITUTE, BETHESDA, MD

■ Estimated damage: **\$1.2 billion worldwide**

SOURCE: COMPUTER ECONOMICS INC., CARLSBAD, CALIF.

■ Total Internet vulnerabilities reported:

▶ 2000: **1,090**

▶ 2001 (so far): **1,151**

SOURCE: CERT COORDINATION CENTER, PITTSBURGH

* AS OF 1 P.M. EST

Siebel Systems Inc. in San Mateo, Calif. The effort is the latest addition to a multimillion-dollar, multivendor CRM call center, Web and field services initiative that began in 1995, when storms caused 250,000 customers to lose power, said Richard Shipley, director of IS at the company.

The new systems earlier this year helped PG&E reduce call volume when rolling blackouts went into effect and the company's calls jumped 250%. "Having those core applications in place positioned us fairly well for the energy crisis of today," said Shipley.

But despite these upgrades, the nation's power industry has merely taken "baby steps" to advance its use of CRM to improve customer service relative to companies in other industries such as financial services, said Allison Bacon, an analyst at Boston-based AMR Research Inc. Most power companies "are just kicking the tires [with CRM], trying online billing. ... It's all very disappointed," she said.

Indeed, there aren't many commercial CRM applications that are specifically targeted at the power industry.

Most power companies have been limited to using things like software that supports

billing analytics and online account management, Bacon said. She noted that power companies take their time in making CRM application purchases, reflecting monopolistic practices of pre-deregulation days, when investments were recouped gradually through rate structure changes.

However, for cash-strapped utilities, getting CRM applications up and running quickly has been critical. If these systems are deployed and managed effectively, they should result in a quick return on investment, said Bacon. But with little capital to work with, she added, "it's a catch-22."

PG&E plans to use its SPL and Siebel software to replace its original call center provider, Meriden, Conn.-based Information Management Associates Inc. (IMA). PG&E has been operating under Chapter 11 bankruptcy protection for more than a year.

About six months ago, in the middle of an enterprise application integration project, PG&E opted to swap out the IMA software for Siebel's applications, said Shipley. Making the switch will cost a "fair chunk of change," he said, but the architectural advantages of the Siebel system made it very attractive. ▀

Worm Infections Top 340,000

Security analysts said Friday that more than 340,000 systems appear to have been infected by the Code Red worm since its re-emergence. But the full extent of the damage being wrought by the worm remained unclear.

The new infections didn't cause any catastrophic slowdown in the performance of the Internet, as some officials feared. But the FBI's National Infrastructure Protection Center (NIPC) continued to urge all users who haven't installed protective patches for Microsoft's Web server software "to do so quickly."

In an interview, NIPC Director Ronald Dick said he's hopeful that the unprecedented move of holding a televised press conference last Monday with representatives from Microsoft and a half-dozen industry associations got the warning out to tens of thousands of corporate users in time to install fixes.

But Code Red is still running a big tab with users. According to a report by Michael Erbschloe, vice president of research at Computer Economics Inc. in Carlsbad, Calif., the worm has cost companies about \$1.2 billion.

- Dan Verton

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FRANK HAYES/FRANKLY SPEAKING

Waiting for Code Red

CODE RED won't actually attack again until Aug. 20. But what have we already learned from it? **"Software engineering" is to engineering what fantasy baseball is to baseball** — not much like the real thing. How else to explain how any commercial software written by professional "software engineers" still has a buffer-overflow bug? There's not a competent programmer on the face of the planet who can't write a buffer that won't overflow. That code shouldn't have made it through its first code review. Or past the programmer's Enter key.

There's no excuse for it. As Microsoft's chief software architect, Bill Gates should be personally ashamed.

Six out of seven systems administrators can't be bothered to use protection. By one estimate, 85% of vulnerable systems hadn't been patched by Aug. 1, when Code Red started spreading again. Other estimates put the figure as low as half. Either way, the numbers are far too high.

Let's be fair: Microsoft issues hundreds of patches for Windows NT and 2000, and too many of them create blue screens on business-critical servers. That makes the cost of constant patching tough for systems administrators to sell to management. But by now, every CEO should have heard of Code Red. So if you can't sell all patches to management, this patch, at least, shouldn't be a tough sell at all.

The way to grab publicity is to hit below the Beltway. And what worm designer *isn't* looking for publicity? Attacking the White House Web site makes Code Red a hot mainstream news story. It gives the FBI an excuse to issue hourly bulletins and offers cable news channels the chance to speculate endlessly on whether the worm's next target will be Congress, the Pentagon or the cafeteria at the Smithsonian. That's the kind of coverage no Love Bug e-mail virus will ever get.

Figures lie, liars figure, and hype machines work overtime. One analyst pronounced last week that Code Red had already cost \$1.2 billion in damage — \$740 million of which was the cost of patching and protecting systems. Why does an analyst count routine security costs as part of Code Red's "economic damage"? Because \$1.2 billion sounds a lot more impressive than a specious estimate of \$450 million in lost productivity.

Meanwhile, just hours after Code Red reactivated itself, it was being declared a dud. Not by security experts — they were still gathering data. But by media talking heads who apparently decided that, since the Internet was still running, Code Red must have fizzled — never mind that it was 19 days before the worm was slated to actually do anything.

The public no longer believes any of us. No wonder 84% of those responding in a CNN online poll last Wednesday said they were no longer worried about Code Red. After two weeks of hype-happy misinformation, they decided Code Red is just another bogus end-of-the-world threat. Of course, if the Net is staggered by the worm on Aug. 20, they'll blame the experts for not warning them. It's a colossal failure in managing expectations.

Worm-writing has come of age. This isn't script-kiddie stuff anymore. Code Red is sophisticated, and it's evolving to become sneakier in its distributed attacks. The nasties have caught up with our lackadaisical attitude about security. Now it's not just the worst of security dummies who can get hurt. Even clean, secure systems can suffer from an Internet clogged with denial-of-service packets. Either we kick security up a notch — or we're cooked.

Politicians won't save us from ourselves. Forget about White House studies, congressional committees or FBI task forces — they can't get IT shops off the dime to take security seriously. What may finally do it? Once insurance companies start writing "patch and inoculate, or we won't pay" clauses into their policies, maybe IT will get the necessary will — and budget — to start securing systems.

In the meantime, we'll still be waiting for Code Red. ■



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SHARK TANK

IN CASE OF FIRE Newly hired IT operations pilot fish gets briefed on emergency procedures: "If a fire should occur in the data center, it's your responsibility to exit the data center carrying the tapes used for disaster recovery from the fire rack," manager says. "If you should become trapped in the data center with these tapes in your possession, you will be fired immediately. No discussion."

fish begins, but vendor techie cuts him off. This hardware has so many fail-safe features, we'll send you some software patches first to see if they fix the problem, he says. "No, we need this hardware replaced," fish replies. "It's probably software — our hardware has a great track record," vendor guy insists. "Why, exactly, do you think it's a hardware problem?" Fish shouts, "Because it was on fire!"

NEWLY PROMOTED MIS manager pilot fish has his first meeting with the boss and learns that from now on, his job performance will be measured solely in terms of system availability. OK, says fish. Half an hour later, a thunderstorm rolls in. Lightning strikes the parking lot 50 feet away. Everything goes dark. Quick-thinking fish sticks his head in the boss's doorway: "Can we change this performance measurement criteria?"

PILOT FISH calls server supplier. "We need the following pieces of hardware replaced,"

PILOT FISH has just installed a brand-new IBM AS/400 mini-computer. He gets back from lunch to find the AS/400 lying on its side "after suffering a slight fall," he says. "Seems one of the clerks wanted to move a terminal. Unfortunately, it was the console attached to the AS/400 — and the cord was not long enough to reach."

You can reach me: sharky@computerworld.com. You score a snazzy Shark shirt if your true tale of IT life sees print — or if it shows up in the daily feed at computerworld.com/sharky.

The 5th Wave



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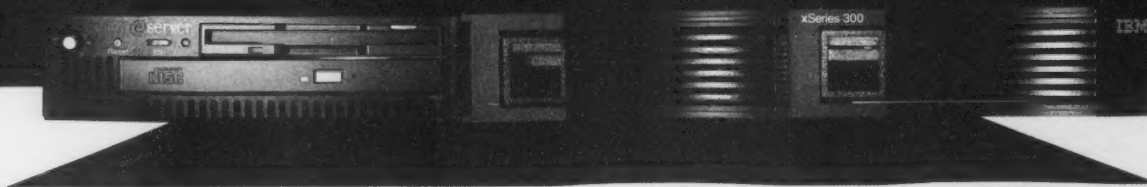
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